

# SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: John Chin Examiner #: \_\_\_\_\_ Date: 3/12/04  
 Art Unit: 1752 Phone Number: 30 571.1579 Serial Number: 10/001786  
 Mail Box and Bldg/Room Location: Room 9d-51 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*  
 Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Photoreversible Molecular Circuitry  
 Inventors (please provide full names): Patricia A. Beck Xiao-An Zhang  
Zhang-Lin Zhou  
 Earliest Priority Filing Date: \_\_\_\_\_

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please search the compound in claim 11 first. if nothing found then search the compounds in claims 13, 14 and 15.

Thank you!  
 John C.

## STAFF USE ONLY

	Type of Search	Vendors and cost where applicable
Searcher: <u>411</u>	NA Sequence (#) _____	STN _____
Searcher Phone #: _____	AA Sequence (#) _____	Dialog _____
Searcher Location: _____	Structure (#) <u>10</u>	Questel/Orbit _____
Date Searcher Picked Up: _____	Bibliographic _____	Dr.Link _____
Date Completed: <u>3/12/04</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: <u>40</u>	Fulltext _____	Sequence Systems _____
Clerical Prep Time: _____	Patent Family _____	WWW/Internet _____
Online Time: <u>70</u>	Other _____	Other (specify) _____

L1 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 2003:818009 HCAPLUS  
DN 139:314469  
ED Entered STN: 17 Oct 2003  
TI Photopatternable molecular circuitry  
IN Beck, Patricia A.; Zhang, Xiao-An; Zhou, Zhang-Lin  
PA USA  
SO U.S. Pat. Appl. Publ., 39 pp.  
CODEN: USXXCO  
DT Patent  
LA English  
IC ICM G03F007-004  
ICS G03C001-52  
NCL 430146000; 430171000; 430270100; 430311000  
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other  
Reprographic Processes)  
Section cross-reference(s): 76

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003194630	A1	20031016	US 2001-1756	20011024 <--
PRAI	US 2001-1756		20011024		
OS	MARPAT 139:314469				

AB Bistable mols. are provided with at least one photosensitive functional group. As thus constituted, the bistable mols. are photo-patternable, thereby allowing fabrication of micrometer-scale and nanometer-scale circuits in discrete areas without relying on a top conductor as a mask. The bistable mols. may comprise mols. that undergo redox reactions, such as rotaxanes and catenanes, or may comprise mols. that undergo an elec.-field-induced band gap change that causes the mols., or a portion thereof, to rotate, bend, twist, or otherwise change from a substantially fully conjugated state to a less conjugated state. The change in states in the latter case results in a change in elec. conductivity

ST photoresist photomask bistable mol circuitry  
IT Optical switches  
(bistable; photo-patternable mol. circuitry)  
IT Photomasks (lithographic masks)  
Photoresists  
(photo-patternable mol. circuitry)

=&gt;

*Applicant -  
note that  
there are no  
R.N. Therefore  
no structures  
were indexed by  
CA.*

=> FILE REG  
FILE 'REGISTRY' ENTERED AT 13:26:11 ON 18 MAR 2004  
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Property values tagged with IC are from the ZIC/VINITI data file  
provided by InfoChem.

STRUCTURE FILE UPDATES: 17 MAR 2004 HIGHEST RN 664302-53-8  
DICTIONARY FILE UPDATES: 17 MAR 2004 HIGHEST RN 664302-53-8

TSCA INFORMATION NOW CURRENT THROUGH JANUARY 6, 2004

Please note that search-term pricing does apply when  
conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more  
information enter HELP PROP at an arrow prompt in the file or refer  
to the file summary sheet on the web at:  
<http://www.cas.org/ONLINE/DBSS/registryss.html>

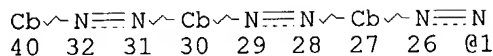
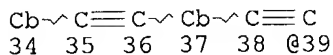
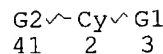
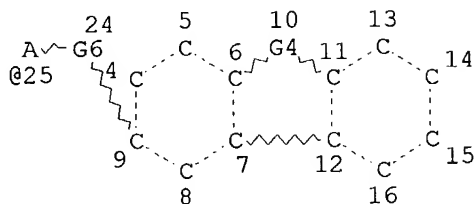
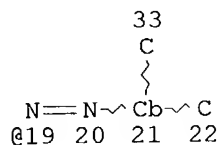
=> FILE HCAPLU  
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FILE COVERS 1907 - 18 Mar 2004 VOL 140 ISS 12  
FILE LAST UPDATED: 17 Mar 2004 (20040317/ED)

This file contains CAS Registry Numbers for easy and accurate  
substance identification.

=> D QUE  
L36 STR



VAR G1=19/25

VAR G2=39/1

VAR G4=O/S/N/P

REP G6=(0-10) A

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

GGCAT IS UNS AT 2

GGCAT IS PCY UNS AT 30

GGCAT IS UNS AT 40

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 38

STEREO ATTRIBUTES: NONE

L38 4 SEA FILE=REGISTRY SSS FUL L36

L39 3 SEA FILE=HCAPLUS ABB=ON L38

=&gt; D L39 ALL 1-3 HITSTR

L39 ANSWER 1 OF 3 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1991:257120 HCAPLUS

DN 114:257120

ED Entered STN: 28 Jun 1991

TI Polynuclear azobenzene derivatives as dichroic dyes and liquid-crystal compositions for guest-host displays

IN Ozawa, Tetsuo; Hosogai, Hisayo

PA Mitsubishi Kasei Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C07C245-08

ICS C07C245-10; C07D215-38; C07D215-40; C07D295-12; C07D455-04;

C09K019-60; G02F001-13

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 41

FAN.CNT 1

PATENT NO.

KIND

DATE

APPLICATION NO.

DATE

*Query covers  
Claim 1 & 14*

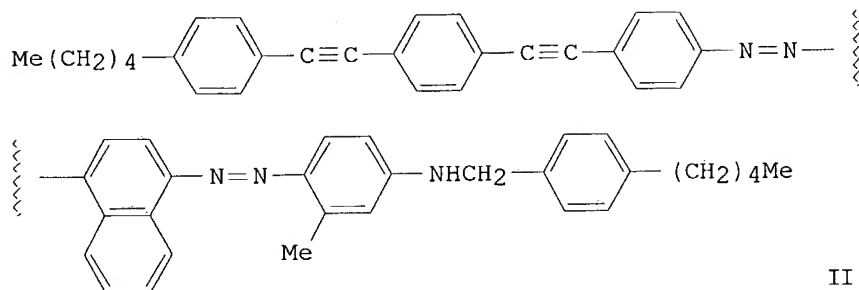
*4 structures*

*3 CA references*

PI JP 02286653  
 PRAI JP 1989-104559  
 GI

A2 19901126  
 19890426

JP 1989-104559 19890426



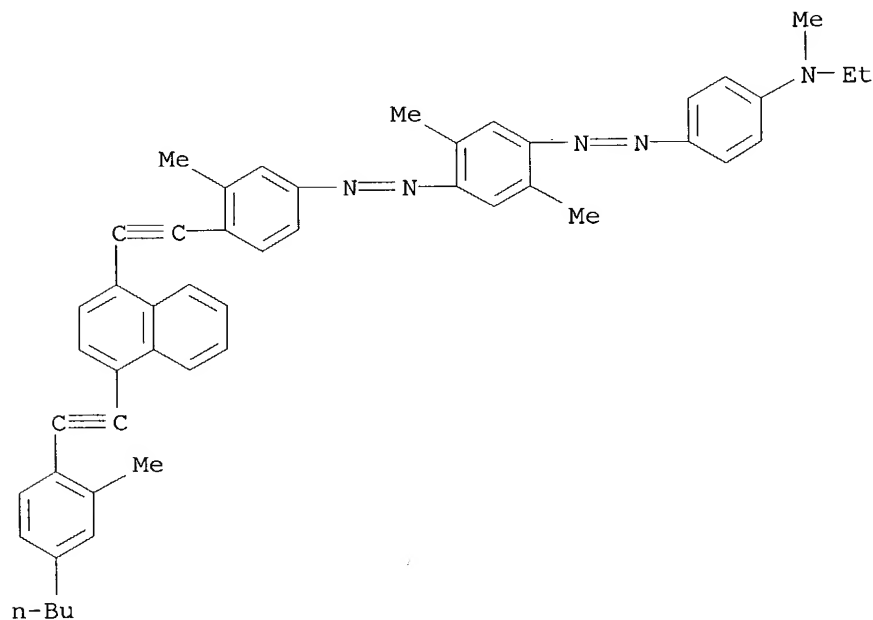
- AB R1AC.tplbond.CA1C.tplbond.CA2N:NA3N:NA4R2 (I; R1 = alkyl, alkoxy; R2 = NR3R4, NR5CH2C6H4R6-4, 1-pyrrolidinyl, morpholino; R3, R4 = alkyl; R5 = H, alkyl; R6 = H, alkyl, alkoxy; A-A4 = 1,4-phenylene which may be substituted with halo or alkyl, 1,4-naphthylene, 5,8-quinolinediyl; when A4 is substituted with alkyl group, the alkyl group may be bonded with R3, R4, or R5 to form a N-containing alicyclic ring) and liquid-crystal compns. containing I are claimed. I show high dichroic ratio and solubility in liquid crystals and the I-containing liquid-crystal compns. give color displays with fine contrast. A mixture of 4-iodotolan derivative II, CuI, 4-Me(CH2)4C6H4C.tplbond.CH, Et3N, o-C6H4Cl2, Pd(PPh3)2Cl2, and PPh3 was stirred at 50° for 3 h to give I [R1 = pentyl, R2 = NHCH2C6H4(CH2)4Me-4, A = A1 = A2 = 1,4-phenylene, A3 = 1,4-naphthylene, A4 = 2-methyl-1,4-phenylene) (III). A composition dissolving III in ZLI-1565 gave a guest-host color display devices.
- ST tolanylethynylphenylazophenylazobenzene dichroic liq crystal display; azobenzene deriv dichroic dye display
- IT Dyes  
 (dichroic, polynuclear tolan-azobenzene derivs., for guest-host liquid-crystal displays)
- IT Optical imaging devices  
 (liquid-crystal, guest-host, polynuclear tolan-azobenzene derivs. as dichroic dyes for)
- IT 134240-77-0  
 RL: USES (Uses)  
 (condensation of, with (pentylphenyl)acetylene, dichroic dye for guest-host liquid-crystal displays from)
- IT 79887-10-8  
 RL: USES (Uses)  
 (condensation of, with [(benzylamino)phenylazo]naphthylazo]iodotolanes, dichroic dye for guest-host liquid-crystal displays from)
- IT 134216-33-4P 134216-34-5P 134216-35-6P 134216-36-7P 134216-37-8P  
 134216-38-9P **134216-39-0P** **134216-40-3P** 134216-41-4P  
 134216-42-5P 134216-43-6P 134216-44-7P 134216-45-8P 134216-46-9P  
 134216-47-0P 134216-48-1P 134216-49-2P 134216-50-5P 134216-51-6P  
 134216-52-7P 134216-53-8P 134216-54-9P 134264-47-4P  
 RL: PREP (Preparation)  
 (preparation of, as dichroic dye for guest-host liquid-crystal displays)
- IT **134216-39-0P** **134216-40-3P**

RL: PREP (Preparation)

(preparation of, as dichroic dye for guest-host liquid-crystal displays)

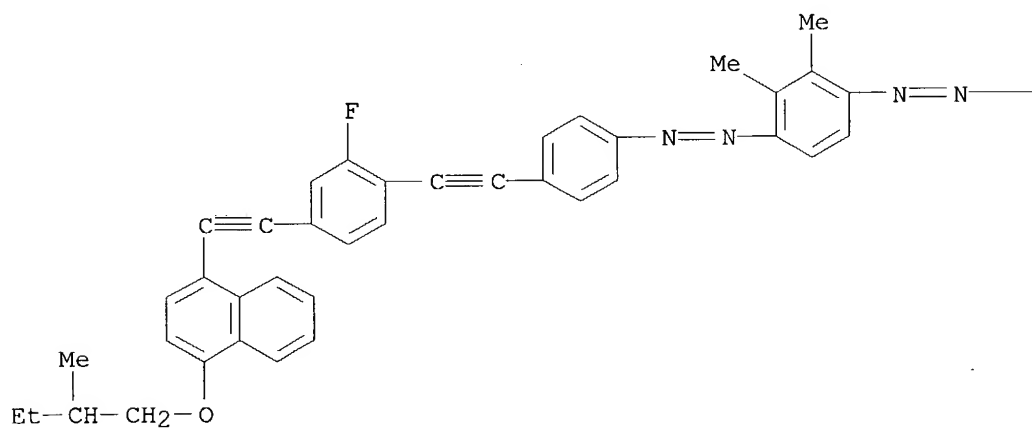
RN 134216-39-0 HCAPLUS

CN Benzenamine, 4-[[4-[[4-[[4-[(4-butyl-2-methylphenyl)ethynyl]-1-naphthalenyl]ethynyl]-3-methylphenyl]azo]-2,5-dimethylphenyl]azo]-N-ethyl-N-methyl- (9CI) (CA INDEX NAME)



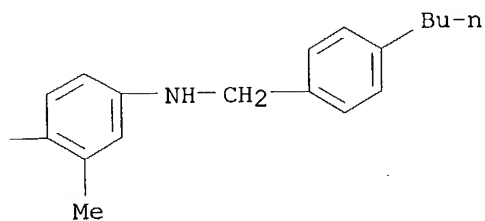
RN 134216-40-3 HCAPLUS

CN Benzenemethanamine, 4-butyl-N-[4-[[4-[[4-[[2-fluoro-4-[[4-(2-methylbutoxy)-1-naphthalenyl]ethynyl]phenyl]ethynyl]phenyl]azo]-2,3-dimethylphenyl]azo]-3-methylphenyl]- (9CI) (CA INDEX NAME)



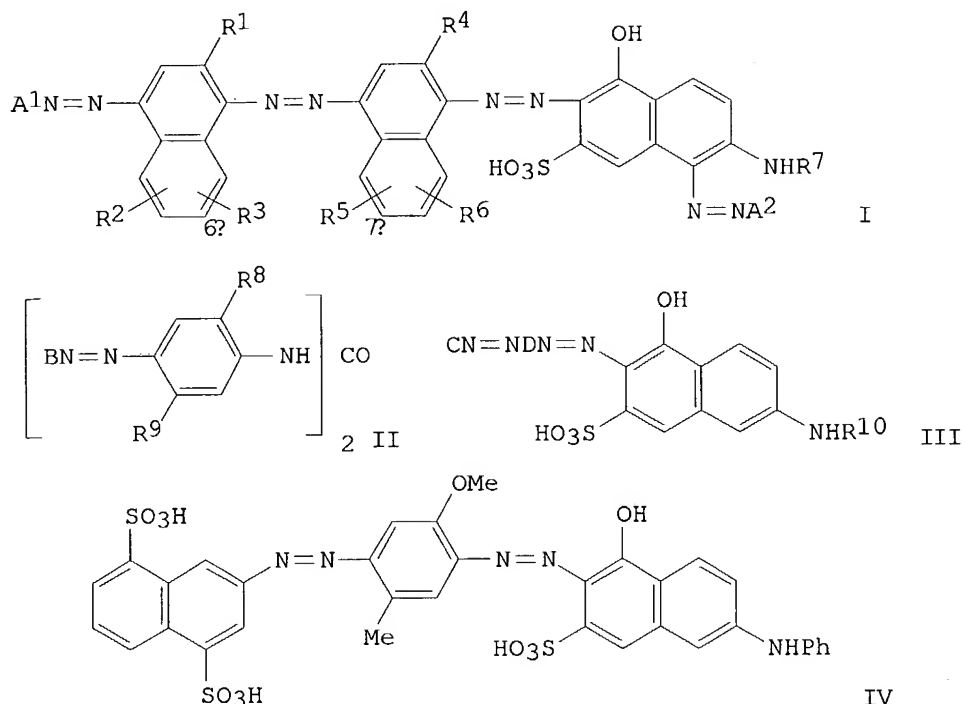
PAGE 1-A

PAGE 1-B



L39 ANSWER 2 OF 3 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 1990:160778 HCAPLUS  
DN 112:160778  
ED Entered STN: 28 Apr 1990  
TI Polarizer plates coated with azo dyes  
IN Suzuki, Shinji; Numa, Tatsuya; Danjo, Hideo; Toda, Junji  
PA Nippon Kayaku Co., Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
IC ICM G02B005-30  
ICS C09B067-22  
CC 42-13 (Coatings, Inks, and Related Products)  
Section cross-reference(s): 41  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	-----	-----	-----
PI	JP 01265205	A2	19891023	JP 1988-93379	19880418
	JP 2568882	B2	19970108		
PRAI	JP 1988-93379		19880418		
OS	MARPAT 112:160778				
GI					



AB The title coatings providing polarization in any direction, are suitable for continuous pattern formation and contain I and II and/or III [A1 = (un)substituted phenyl; A2 = Ph, sulfophenyl; R1, R4 = H, OH, lower alkoxy; R2, R3, R5, R6 = H, OH, SO3H; R7 = H, Me, (un)substituted phenyl; R8, R9 = H, Me, MeO, SO3H; B, C = (un)substituted naphthyl; D = (un)substituted Ph, naphthyl; R10 = H, Me, Ac, CONH2, (un)substituted Ph or benzoyl]. A dye solution was prepared from I (A1 = A2 = m-C6H4SO3H; R4 = OEt; R1 = R2 = R6 = R7 = H; R3 = 6'-SO3H; R5 = 7'-SO3H) 2.0, II (B = 4.8-disulfo-2-naphthyl; R8 = OMe; R9 = Me) 1.5, IV 1.5, Emulgen 920 0.05, and 100 parts. An 80  $\mu$ -thick cellulose triacetate film was given 10 rubs with a felt on its entire surface in the longitudinal direction and then 20 rubs at a certain interval in the transverse direction, washed with water, dried, coated with the above dye solution, and dried at 60° to give a polarizer plate with 36.0% visible transmittance and 80.0% average polarization.

ST azo dye light polarizer plate

IT Optical imaging devices

(azo dye-coated cellulose triacetate films, light-polarizing)

IT Polarizers

(cellulose triacetate films coated with azo dyes)

IT Dyes, azo

(cellulose triacetate films coated with, for light polarizers)

IT	15999-06-1	25180-30-7	25738-24-3	25784-17-2	27990-34-7
	124521-17-1	124521-18-2	125091-19-2	126343-28-0	126343-29-1
	126343-30-4	126343-31-5	126343-32-6	126343-33-7	126343-34-8
	126343-35-9	126343-36-0	126343-37-1	126343-38-2	126343-39-3
	126343-40-6	126343-41-7	126343-42-8	126343-43-9	126343-44-0
	126343-45-1	<b>126343-46-2</b>	126343-47-3	126343-48-4	
	126343-49-5	126343-50-8	126343-51-9	126343-52-0	126343-53-1



126343-54-2 126343-55-3 126412-62-2

RL: USES (Uses)

(cellulose triacetate films coated with, light-polarizing)

IT 9012-09-3, Cellulose triacetate

RL: USES (Uses)

(films, azo dye-coated, for light polarizers)

IT 126343-46-2

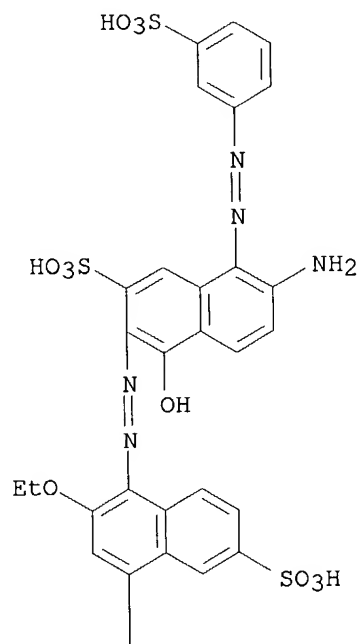
RL: USES (Uses)

(cellulose triacetate films coated with, light-polarizing)

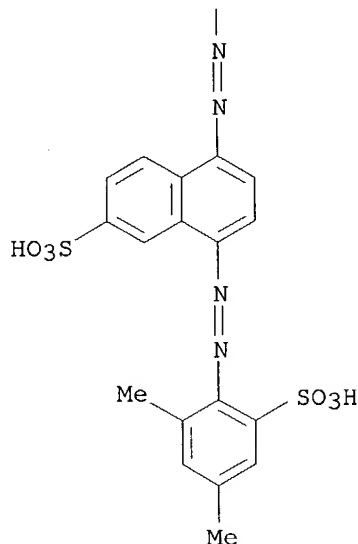
RN 126343-46-2 HCAPLUS

CN 2-Naphthalenesulfonic acid, 5-[[[6-amino-1-hydroxy-3-sulfo-5-[(3-sulfophenyl)azo]-2-naphthalenyl]azo]-8-[[4-[(2,4-dimethyl-6-sulfophenyl)azo]-6-sulfo-1-naphthalenyl]azo]-6-ethoxy- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



L39 ANSWER 3 OF 3 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1989:9722 HCAPLUS  
 DN 110:9722  
 ED Entered STN: 06 Jan 1989  
 TI Water-based jet-printing ink compositions  
 IN Ariga, Tamotsu; Hashimoto, Mitsuru; Shimada, Masaru  
 PA Ricoh Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 8 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM C09D011-00  
 ICS C09B067-24; C09D011-00; C09D011-02  
 CC 41-3 (Dyes, Organic Pigments, Fluorescent Brighteners, and Photographic Sensitizers)  
 Section cross-reference(s): 42  
 FAN.CNT 1  

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 63033483	A2	19880213	JP 1986-175593	19860728
PRAI	JP 1986-175593		19860728		
OS	CASREACT 110:9722; MARPAT 110:9722				
GI					

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB The title ink compns., giving clear images with good water and light resistance, contain  $\geq 1$  water-soluble dye I [A = (un)substituted aryl; R1 = OH, (un)substituted amino; M = H, alkali metal, quaternary ammonium, amine; R2 = H, OH, (un)substituted amino; m = 0, 1; n = 1, 2].  
 4-O2NC6H4NH2 was diazotized and coupled with 1-amino-8-naphthol-3,6-

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

disulfonic acid Na salt, and the azo intermediate coupled with diazotized 2,7-diamino-9-fluorenone to give II. II 3.0, diethylene glycol 15.0, N-methyl-2-pyrrolidone 15.0, Na dehydroacetate 0.2, and H<sub>2</sub>O 66.8% were mixed and stirred at .apprx.50°, and filtered to give an ink. When the ink was applied to jet printing, a clear image was obtained without nozzle clogging. The image showed fading ratio (after 1-min immersion in water at 30°) 8%, and (after 3-h in a fadeometer at 63°) 6%, vs. 7, and 3, resp., for a control ink prepared using C.I. Direct Black 32 instead of II.

ST jet printing ink azo dye; water resistance jet printing ink; light resistance jet printing ink

IT Dyes, azo  
(jet printing inks containing, clogging-resistant, giving clear image with good resistance to water and light)

IT Water-resistant materials  
(inks, jet-printing, containing water-soluble azo dyes, light- and clogging-resistant)

IT Inks  
(jet-printing, light- and water-resistant, water-soluble azo dyes for, clogging-resistant)

IT 2915-84-6  
RL: USES (Uses)  
(coupling of diazotized, with naphthol azo compds.)

IT 100-01-6, p-Nitroaniline, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(coupling of diazotized, with naphthols)

IT 3963-80-2  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(coupling of, with diazotized nitroaniline)

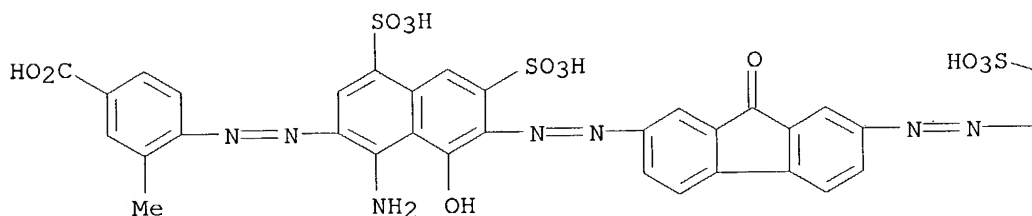
IT 115898-83-4P 115898-84-5P 115898-86-7P 115898-88-9P 115898-90-3P  
115898-92-5P **115898-93-6P** 115898-94-7P 115898-95-8P  
115898-96-9P 115898-97-0P 115898-98-1P 115899-00-8P 117869-96-2P  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(preparation of, as dye for jet-printing inks)

IT **115898-93-6P**  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(preparation of, as dye for jet-printing inks)

RN 115898-93-6 HCAPLUS

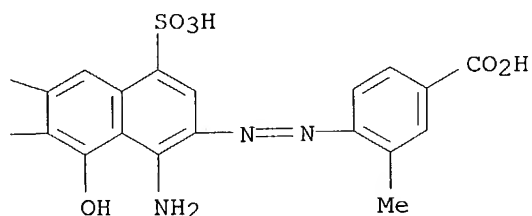
CN Benzoic acid, 4,4'-[(9-oxo-9H-fluorene-2,7-diyl)bis[azo(1-amino-8-hydroxy-4,6-disulfo-7,2-naphthalenediyl)azo]]bis[3-methyl-, hexasodium salt (9CI)  
(CA INDEX NAME)

PAGE 1-A



● 6 Na

PAGE 1-B



=&gt; =&gt; D QUE L13

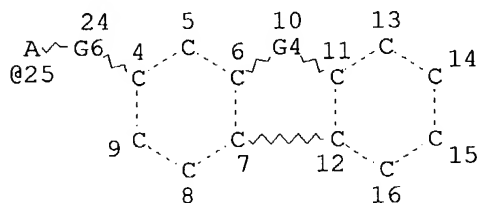
L13 1870 SEA FILE=HCAPLUS ABB=ON OPTICAL SWITCHES/IT

=&gt; D QUE L33

L4 STR

Cb~G3~A~A~Cb~G2~A~A~Cy~G1  
 32 31 30 29 28 27 26 1 2 3

A~A~G5~Cb  
 @19 20 21 22



*covers 11, 13, 14*  
*15*

VAR G1=19/25

REP G2=(1-10) A

REP G3=(0-10) A

VAR G4=O/S/N/P

REP G5=(0-10) A

REP G6=(0-10) A

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

GGCAT IS UNS AT 2

GGCAT IS UNS AT 22

GGCAT IS UNS AT 28

GGCAT IS UNS AT 32

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 29

STEREO ATTRIBUTES: NONE

L10 400 SEA FILE=HCAPLUS ABB=ON MOLECUL?(3A)CIRCUIT?

L11 4670 SEA FILE=HCAPLUS ABB=ON BISTABIL?

L12 120 SEA FILE=HCAPLUS ABB=ON BISTABIL?(5A)MOLECUL?

L13 1870 SEA FILE=HCAPLUS ABB=ON OPTICAL SWITCHES/IT

L15 37 SEA FILE=HCAPLUS ABB=ON L11 AND L13

L16 220 SEA FILE=HCAPLUS ABB=ON L13 AND MOLEC?

*12 structures*

L17 764 SEA FILE=HCAPLUS ABB=ON L12 OR L10 OR L15 OR L16  
L18 9 SEA FILE=HCAPLUS ABB=ON L11 AND PHOTSENSIT?  
L19 101 SEA FILE=HCAPLUS ABB=ON L11 AND CIRCUIT?  
L20 868 SEA FILE=HCAPLUS ABB=ON (L17 OR L18 OR L19)  
L22 2798 SEA FILE=HCAPLUS ABB=ON MOECUL?(5A)SWITCH?  
L23 3504 SEA FILE=HCAPLUS ABB=ON L20 OR L22  
L24 SEL L23 1- RN : 8549 TERMS  
L25 8549 SEA FILE=REGISTRY ABB=ON L24  
L27 149 SEA FILE=HCAPLUS ABB=ON L11 AND ?RESIST?  
L28 SEL L27 1- RN : 167 TERMS  
L29 167 SEA FILE=REGISTRY ABB=ON L28  
L30 8639 SEA FILE=REGISTRY ABB=ON L25 OR L29  
L32 12 SEA FILE=REGISTRY SUB=L30 SSS FUL L4  
L33 13 SEA FILE=HCAPLUS ABB=ON L32

=> D L33 ALL 1-13 HITSTR

*13 CA references*

L33 ANSWER 1 OF 13 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 2003:139800 HCAPLUS  
DN 138:321666  
ED Entered STN: 25 Feb 2003  
TI Single Molecule Force Spectroscopy of Azobenzene Polymers: Switching  
Elasticity of Single Photochromic Macromolecules  
AU Holland, Nolan B.; Hugel, Thorsten; Neuert, Gregor; Cattani-Scholz, Anna;  
Renner, Christian; Oesterhelt, Dieter; Moroder, Luis; Seitz, Markus; Gaub,  
Hermann E.  
CS Lehrstuhl fuer Angewandte Physik Center for Nanoscience,  
Ludwig-Maximilians-Universitaet, Munich, 80799, Germany  
SO Macromolecules (2003), 36(6), 2015-2023  
CODEN: MAMOBX; ISSN: 0024-9297  
PB American Chemical Society  
DT Journal  
LA English  
CC 35-5 (Chemistry of Synthetic High Polymers)  
Section cross-reference(s): 22, 34, 73  
AB The reversible, optical switching of individual mols. of a polypeptide  
with azobenzene moieties, was observed using mol. force spectroscopy. The  
polypeptide was prepared by polycondensation of tripeptide monomers containing  
(4-aminomethyl)phenylazobenzoic acid (AMPB) to obtain H-Cys(Trt)-  
[Lys(Adoc)-AMPB-Gly]n-OH. The contour length of the polymer could be  
selectively lengthened or shortened by switching between the trans- and  
cis-azo configurations with 420 and 365 nm wavelength light, resp. This  
cis- to trans-azo configurational transition induced by UV light resulted  
in a measurable change in polymer contour length. The contour length  
change was observed at low force and under external loads of up to 400 pN  
using a modified force spectrometer, in which the sample could be  
irradiated in total internal reflectance. The ability to shorten the  
polymer against an external load demonstrates photomech. energy conversion  
in an individual mol., of interest in development of mol. machines.  
ST polypeptide aminomethylphenylazobenzoic acid moiety reversible switching;  
single mol photochromic polypeptide azobenzene chromophore elasticity  
switching; photomech energy conversion elasticity switching polypeptide  
azobenzene  
IT Plasticity  
(photoplasticity; switching elasticity of polypeptide-azobenzene single  
photochromic mols. studied by optical excitation and AFM using object  
slide as waveguide)

IT Photomechanical effect  
 (plasticity; switching elasticity of polypeptide-azobenzene single photochromic mols. studied by optical excitation and AFM using object slide as waveguide)

IT Atomic force microscopy  
 Chromophores  
 Molecular dynamics  
 Optical switching  
 Optical waveguides  
 Photochromism  
 Photoelasticity  
 (switching elasticity of polypeptide-azobenzene single photochromic mols. studied by optical excitation and AFM using object slide as waveguide)

IT Polyamides, properties  
 RL: PRP (Properties)  
 (switching elasticity of polypeptide-azobenzene single photochromic mols. studied by optical excitation and AFM using object slide as waveguide)

IT 103213-32-7DP, termination products with peptides 512197-42-1DP, cysteine derivative-terminated **512197-45-4P**  
 RL: PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation)  
 (switching elasticity of polypeptide-azobenzene single photochromic mols. studied by optical excitation and AFM using object slide as waveguide)

RE.CNT 72 THERE ARE 72 CITED REFERENCES AVAILABLE FOR THIS RECORD  
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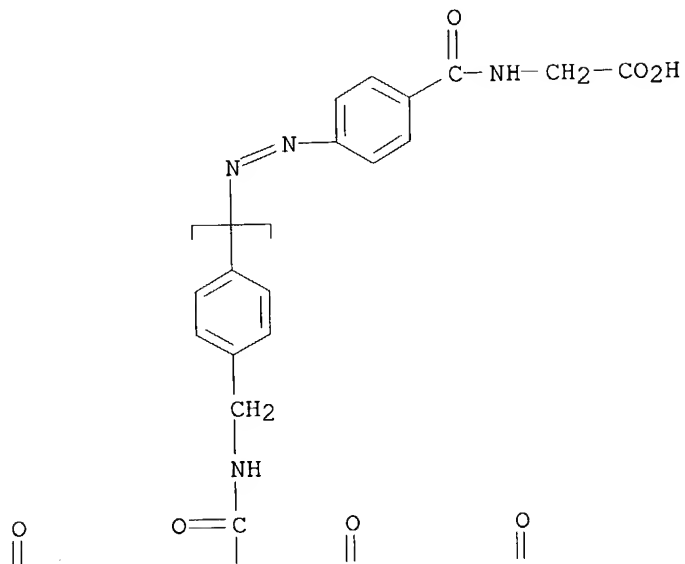
IT 512197-45-4P

RL: PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation)  
(switching elasticity of polypeptide-azobenzene single photochromic  
mols. studied by optical excitation and AFM using object slide as  
waveguide)

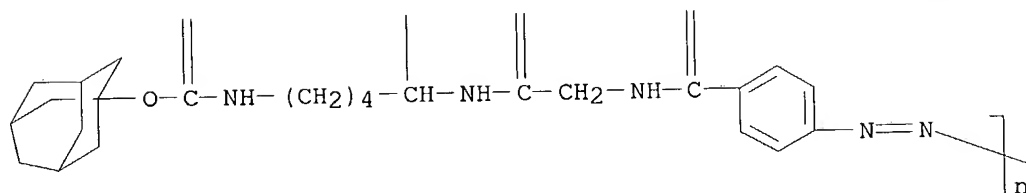
RN 512197-45-4 HCAPLUS

CN Poly[(1E)-azo-1,4-phenylenecarbonylimino(2-oxo-1,2-ethanediyl)imino[(1S)-2-oxo-1-[4-[[tricyclo[3.3.1.1<sup>3,7</sup>]dec-1-yloxy)carbonyl]amino]butyl]-1,2-ethanediyl]iminomethylene-1,4-phenylene],  $\alpha$ -[4-[[[S-(triphenylmethyl)-L-cysteinyl-N6-[[tricyclo[3.3.1.1<sup>3,7</sup>]dec-1-yloxy)carbonyl]-L-lysyl]amino]methyl]phenyl]- $\omega$ -[(1E)-[4-[[[(carboxymethyl)amino]carbonyl]phenyl]azo]- (9CI) (CA INDEX NAME)

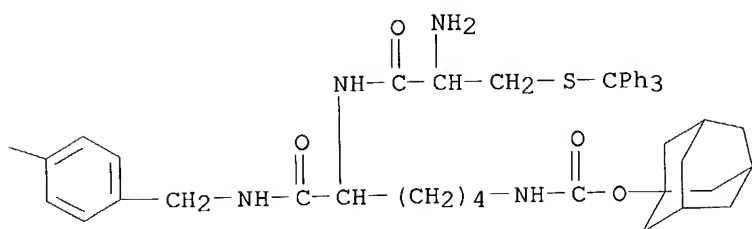
PAGE 1-A



PAGE 2-A



PAGE 2-B



L33 ANSWER 2 OF 13 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2001:330311 HCAPLUS  
 DN 135:84571  
 ED Entered STN: 09 May 2001

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

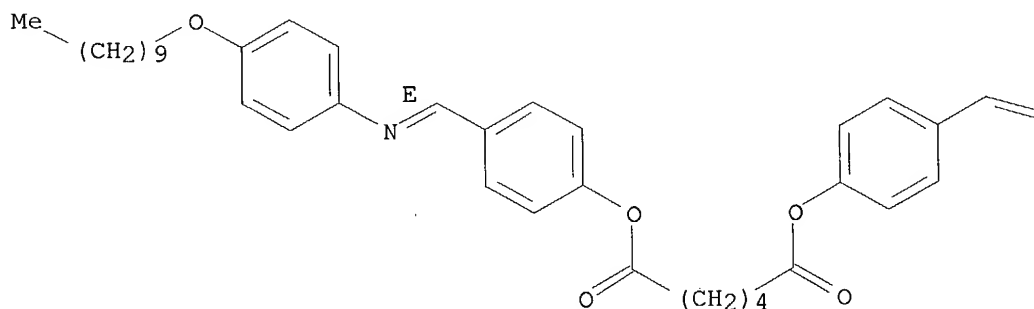


TI Liquid crystalline dimeric compounds with an alkylene spacer  
 AU Prasad, Veena; Rao, D. S. Shankar; Prasad, S. Krishna  
 CS Centre for Liquid Crystal Research, Bangalore, 560 013, India  
 SO Liquid Crystals (2001), 28(5), 761-767  
 CODEN: LICRE6; ISSN: 0267-8292  
 PB Taylor & Francis Ltd.  
 DT Journal  
 LA English  
 CC 75-11 (Crystallography and Liquid Crystals)  
 Section cross-reference(s): 25, 73  
 AB Two series of compds. with dimeric mols. were synthesized and characterized. These mols. consist of two nonmesogenic units linked by an alkylene spacer through an ester linkage. The effects of varying the terminal as well as the spacer chain length on the mesomorphic properties were studied. For compds. with an even number of C atoms in the spacer chains, the observed textures in the mesophases are reminiscent of those seen for the smectic phases of banana-shaped mols.  
 ST liq crystal dimeric compd alkylene space ester linkage  
 IT Phase transition enthalpy  
 (of liquid crystal dimeric compds. with alkylene spacer through ester linkage)  
 IT Liquid crystals  
 (preparation and properties of dimeric compds. with alkylene spacer through ester linkage)  
 IT Electrooptical effect  
 (switching; of liquid crystal dimeric compound with alkylene spacer through ester linkage)  
 IT Liquid crystals  
 (transitions; of dimeric compds. with alkylene spacer through ester linkage)  
 IT 280116-08-7 294624-56-9  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (esterification of)  
 IT **280116-07-6P** 347150-98-5P 347151-00-2P 347151-02-4P  
 347151-04-6P 347151-06-8P 347151-08-0P 347151-10-4P 347151-12-6P  
 347151-14-8P 347151-16-0P 347151-18-2P 347151-20-6P 347151-22-8P  
 347151-24-0P  
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)  
 (preparation and liquid crystal properties of)  
 RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 RE  
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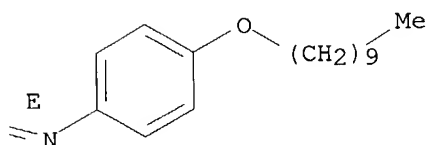
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 IT 280116-07-6P  
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN  
 (Synthetic preparation); PREP (Preparation); PROC (Process)  
 (preparation and liquid crystal properties of)  
 RN 280116-07-6 HCAPLUS  
 CN Hexanedioic acid, bis[4-[(E)-[[4-(decyloxy)phenyl]imino]methyl]phenyl]  
 ester (9CI) (CA INDEX NAME)

Double bond geometry as shown.

PAGE 1-A



PAGE 1-B



L33 ANSWER 3 OF 13 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2000:764376 HCAPLUS  
 DN 134:49469  
 ED Entered STN: 01 Nov 2000  
 TI Smectic mesophase properties of dimeric compounds. 2. Distinct formation  
 of smectic structures with antiferroelectric ordering and frustration  
 AU Watanabe, Junji; Izumi, Tatuya; Niori, Teruki; Zennyoji, Masahito;  
 Takanishi, Yoichi; Takezoe, Hideo  
 CS Department of Polymer Chemistry, Tokyo Institute of Technology, Tokyo,  
 152, Japan  
 SO Molecular Crystals and Liquid Crystals Science and Technology, Section A:  
 Molecular Crystals and Liquid Crystals (2000), 346, 77-86  
 CODEN: MCLCE9; ISSN: 1058-725X  
 PB Gordon & Breach Science Publishers  
 DT Journal  
 LA English  
 CC 75-11 (Crystallography and Liquid Crystals)  
 Section cross-reference(s): 25, 76

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

AB Two series of dimeric compds., which comprise the Schiff's base mesogen, alkyl spacer with the C number of 5 and alkyl or alkoxy tail with the C number of m = 4-16, were prepared. In these compds., three types of smectic liquid crystals were observed: the single layer phase with the tail group randomly mixing with the spacer, the bilayer phase in which the segregation of the spacer and tail groups takes place and so two mesogenic layers are included within a repeat unit, and the frustrated smectic phase in which the d. modulation appears along the layer as well as the layer normal. The bilayer phase is antiferroelec. and the frustrated smectic phase was considered to result from the two-dimensional escape from the dipolar interaction. The phase behavior with m and the structure and properties of each phase are described.

ST dimeric compd Schiff base mesogenic group smectic antiferroelec

IT Liquid crystals  
(antiferroelec.; preparation and phase behavior and structure of dimeric compds. with Schiff base mesogenic group)

IT Antiferroelectric materials  
(liquid-crystal; preparation and phase behavior and structure of dimeric compds. with Schiff base mesogenic group)

IT Phase transition enthalpy  
Phase transition entropy  
(of dimeric compds. with Schiff base mesogenic group)

IT Liquid crystals  
(smectic; preparation and phase behavior and structure of dimeric compds. with Schiff base mesogenic group)

IT Liquid crystals  
(transitions; of dimeric compds. with Schiff base mesogenic group)

IT 211049-26-2P **243975-13-5P 250689-35-1P** 312610-29-0P  
312610-30-3P 312610-31-4P 312610-33-6P 312610-34-7P  
RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)  
(preparation and liquid crystal phase behavior and structure of)

IT 312610-32-5P  
RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)  
(preparation and thermal behavior of)

RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD

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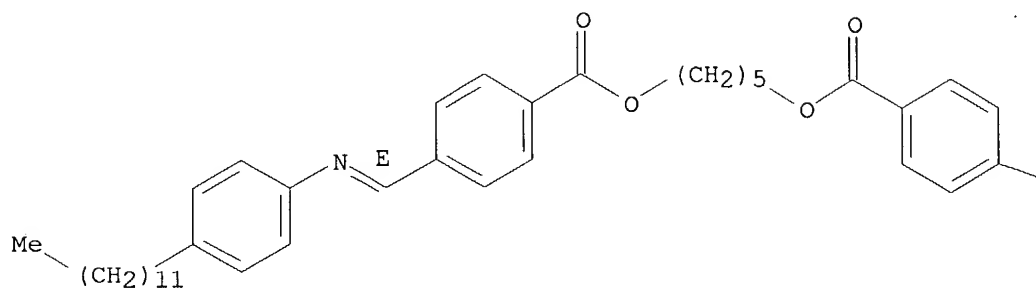
IT **243975-13-5P 250689-35-1P**  
RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)  
(preparation and liquid crystal phase behavior and structure of)

RN 243975-13-5 HCAPLUS

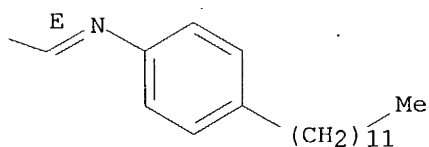
CN Benzoic acid, 4-[(E)-[(4-dodecylphenyl)imino]methyl]-, 1,5-pentanediy ester (9CI) (CA INDEX NAME)

Double bond geometry as shown.

PAGE 1-A



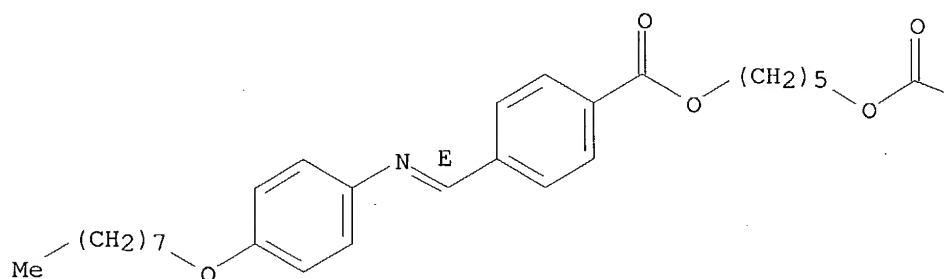
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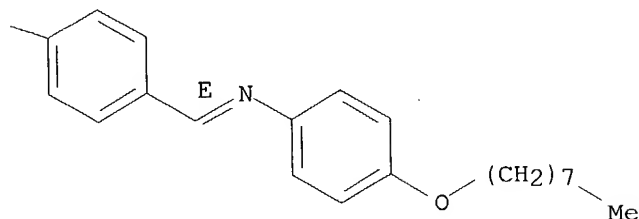
RN 250689-35-1 HCAPLUS  
 CN Benzoic acid, 4-[(E)-[[4-(octyloxy)phenyl]imino]methyl]-, 1,5-pentanediy  
 ester (9CI) (CA INDEX NAME)

Double bond geometry as shown.

PAGE 1-A



PAGE 1-B



L33 ANSWER 4 OF 13 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 2000:359759 HCAPLUS  
DN 133:81805  
ED Entered STN: 31 May 2000  
TI Ferroelectric switching in a novel bent-shaped mesogen having two non-mesogenic units linked by an alkylene spacer  
AU Prasad, Veena; Rao, D. S. Shankar; Prasad, S. Krishna  
CS Centre for Liquid Crystal Research, Bangalore, 560 013, India  
SO Liquid Crystals (2000), 27(5), 585-590  
CODEN: LICRE6; ISSN: 0267-8292  
PB Taylor & Francis Ltd.  
DT Journal  
LA English  
CC 75-11 (Crystallography and Liquid Crystals)  
Section cross-reference(s): 25, 74, 76  
AB The authors report the synthesis, x-ray diffraction results and electrooptical switching measurements for a bent-shaped mesogen having two nonmesogenic units linked by an alkylene spacer. The novelty of the mol. structure lies in the carbonyl group of the ester linkage being directly attached to the spacer unit, unlike for banana-shaped mols. reported so far, in which it is one O atom away from the spacer or the central aromatic unit. The compound shows two mesophases: the high temperature mesophase is a tilted smectic phase showing ferroelec. switching characteristics; the low temperature phase is more highly ordered with textural features similar to that of the B3 banana phase.  
ST ferroelec switching bent shaped mesogen nonmesogenic alkylene spacer  
IT Ferroelectric switching  
(ferroelec. switching in bent-shaped mesogen having two non-mesogenic units linked by alkylene spacer)  
IT Molecular structure-property relationship  
(ferroelec. switching; in bent-shaped mesogen having two non-mesogenic units linked by alkylene spacer)  
IT Liquid crystals  
(in bent-shaped mesogen having two non-mesogenic units linked by alkylene spacer)  
IT Liquid crystals  
(transitions; of bis[(decyloxyphenyliminomethyl)phenyl] adipate)  
IT 124-04-9, Hexanedioic acid, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(esterification of adipic acid with (decyloxyphenyliminomethyl)phenol)  
IT 280116-08-7P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

(Reactant or reagent)

(preparation and esterification of adipic acid by)

IT 280116-07-6P

RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)

(preparation, liquid crystal properties and ferroelec. switching of)

IT 123-08-0, 4-Hydroxybenzaldehyde 39905-47-0, 4-(Decyloxy)aniline

RL: RCT (Reactant); RACT (Reactant or reagent)

(reaction of decyloxyaniline with hydroxybenzaldehyde)

RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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IT 280116-07-6P

RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)

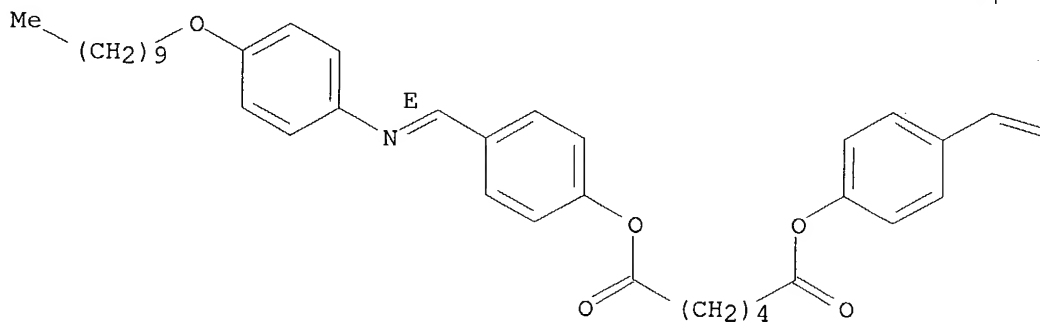
(preparation, liquid crystal properties and ferroelec. switching of)

RN 280116-07-6 HCAPLUS

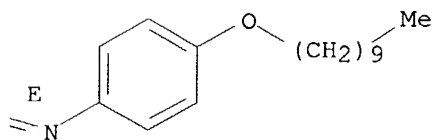
CN Hexanedioic acid, bis[4-[(E)-[[4-(decyloxy)phenyl]imino]methyl]phenyl] ester (9CI) (CA INDEX NAME)

Double bond geometry as shown.

PAGE 1-A



PAGE 1-B



L33 ANSWER 5 OF 13 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1999:734438 HCAPLUS  
 DN 132:71699  
 ED Entered STN: 19 Nov 1999  
 TI Field-induced molecular reorientation keeping a frustrated structure in an  
 achiral bent-shaped liquid crystal  
 AU Takanishi, Yoichi; Izumi, Tatsuya; Watanabe, Junji; Ishikawa, Ken;  
 Takezoe, Hideo; Iida, Atsuo  
 CS Dep. of Organic and Polymeric Materials, Tokyo Institute of Technology,  
 Tokyo, 152-8552, Japan  
 SO Journal of Materials Chemistry (1999), 9(11), 2771-2774  
 CODEN: JMACEP; ISSN: 0959-9428  
 PB Royal Society of Chemistry  
 DT Journal  
 LA English  
 CC 75-11 (Crystallography and Liquid Crystals)  
 Section cross-reference(s): 25, 73, 76  
 AB The layer and mol. orientational structures were studied by x-ray  
 microbeam diffraction and optical birefringence measurements in the  
 frustrated smectic phase of a bent-shaped mol. with two mesogens linked by  
 an alkylene spacer ( $\alpha,\omega$ -bis{4-[(4-octyloxyphenyl)iminomethyl]benzoyloxy}pentane). In the x-ray microbeam  
 measurement, only one diffraction peak indicating (002) was observed in a  
 thin homogeneous cell without an elec. field, while two other peaks  
 corresponding to (101) and (10.hivin.1) also appear by applying the field.  
 Also, also the birefringence under an applied field is larger than that  
 without the field. Mols. reorient due to dielec. anisotropy keeping the  
 frustrated structure.  
 ST octyloxyphenyliminomethylbenzoyloxypentane smectic mol reorientation elec  
 field  
 IT Dielectric anisotropy  
 (elec. field-induced mol. reorientation keeping frustrated structure in  
 achiral bent-shaped liquid crystal bis{[(octyloxyphenyl)iminomethyl]benzo  
 yloxy}pentane in relation to)  
 IT Molecular reorientation  
 (field-induced mol. reorientation keeping frustrated structure in  
 achiral bent-shaped liquid crystal bis{[(octyloxyphenyl)iminomethyl]benzo  
 yloxy}pentane)  
 IT Electric field effects  
 (induced mol. reorientation keeping frustrated structure in achiral  
 bent-shaped liquid crystal bis{[(octyloxyphenyl)iminomethyl]benzoyloxy}pe  
 ntane)  
 IT Kerr effect (electrooptical)  
 (of achiral bent-shaped liquid crystal bis{[(octyloxyphenyl)iminomethyl]b  
 enzoyloxy}pentane)  
 IT Birefringence  
 (of achiral bent-shaped liquid crystal bis{[(octyloxyphenyl)iminomethyl]b  
 enzoyloxy}pentane with and without elec. field)  
 IT Liquid crystals  
 (smectic; field-induced mol. reorientation keeping frustrated structure  
 in achiral bent-shaped liquid crystal bis{[(octyloxyphenyl)iminomethyl]be  
 nzoyloxy}pentane)  
 IT **250689-35-1**  
 RL: PEP (Physical, engineering or chemical process); PRP (Properties);  
 PROC (Process)  
 (field-induced mol. reorientation keeping frustrated structure in  
 achiral bent-shaped liquid crystal)  
 RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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IT 250689-35-1

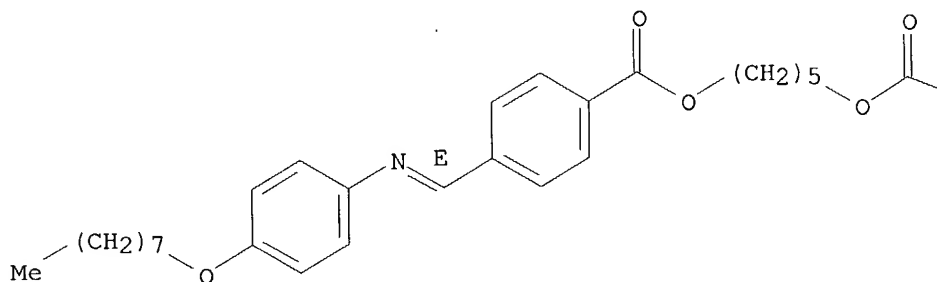
RL: PEP (Physical, engineering or chemical process); PRP (Properties);  
PROC (Process)(field-induced mol. reorientation keeping frustrated structure in  
achiral bent-shaped liquid crystal)

RN 250689-35-1 HCAPLUS

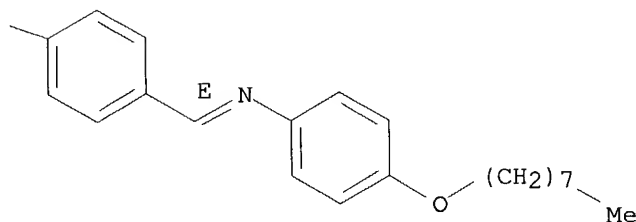
CN Benzoic acid, 4-[(E)-[[4-(octyloxy)phenyl]imino]methyl]-, 1,5-pentanediy  
ester (9CI) (CA INDEX NAME)

Double bond geometry as shown.

PAGE 1-A



PAGE 1-B



L33 ANSWER 6 OF 13 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1999:649499 HCAPLUS

DN 131:345712

ED Entered STN: 13 Oct 1999

TI An Iron-Based Molecular Redox Switch as a Model for Iron Release from  
Enterobactin via the Salicylate Binding Mode

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505



AU Ward, Thomas R.; Lutz, Andreas; Parel, Serge P.; Ensling, Juergen;  
 Guetlich, Philipp; Buglyo, Peter; Orvig, Chris  
 CS Department of Chemistry and Biochemistry, University of Berne, Bern,  
 CH-3012, Switz.  
 SO Inorganic Chemistry (1999), 38(22), 5007-5017  
 CODEN: INOCAJ; ISSN: 0020-1669  
 PB American Chemical Society  
 DT Journal  
 LA English  
 CC 78-7 (Inorganic Chemicals and Reactions)  
 Section cross-reference(s): 6, 65, 68, 72, 73  
 AB The Fe release mechanism from protonated ferric enterobactin  
 [FeIII(enterobactinH3)] via the salicylate binding mode was probed. For  
 this purpose, a tripodal dodecadentate ligand incorporating three  
 salicylamide (OO) and three bipyridine (NN) binding sites was synthesized  
 as well as Fe complexes thereof. A ferric ion coordinates selectively to  
 the hard salicylamides and a ferrous ion binds to the softer bipyridines.  
 Upon reduction or oxidation, the Fe translocates reversibly and  
 intramolecularly  
 from one site to the other, thus displaying switchlike properties. Both  
 states were characterized by cyclic voltammetry and visible and Mossbauer  
 spectroscopy. The Mossbauer spectrum for the ferric complex is fully  
 consistent with that obtained by Pecoraro et al. upon lowering the pH of  
 [FeIII(enterobactin)]3- solns. (Pecoraro, V. L., et al., 1983), thus  
 supporting the alternative Fe release mechanism from enterobactin via the  
 salicylate binding mode.  
 ST enterobactin iron release model mol redox switch; iron salicylamide  
 bipyridine tripodal ligand prepn redox switch; stability const iron  
 salicylamide bipyridine tripodal ligand; protonation const bipyridine  
 tripodal ligand; Mossbauer iron salicylamide bipyridine tripodal complex;  
 electrochem redn iron salicylamide bipyridine tripodal complex  
 IT Isomers  
 (linkage; of iron(II) vs. iron(III) to salicylamide bipyridine tripodal  
 ligands)  
 IT Formation constant  
 Reduction potential  
 (of iron salicylamide bipyridine tripodal complexes)  
 IT Coordination (structure)  
 (of iron(II) vs. iron(III) to salicylamide bipyridine tripodal ligands)  
 IT Protonation  
 (of salicylamide bipyridine tripodal ligands)  
 IT Molecular structure  
 (optimized; of iron salicylamide bipyridine tripodal ligand complexes)  
 IT 182870-02-6 182870-04-8  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (complexation with iron)  
 IT 28384-96-5, Enterobactin  
 RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC  
 (Process); RACT (Reactant or reagent)  
 (iron-based mol. redox switch as a model for iron release from  
 enterobactin via salicylate binding mode)  
 IT **250207-71-7P**  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (preparation and complexation with iron)  
 IT **250207-72-8P**  
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP  
 (Preparation); RACT (Reactant or reagent)

(preparation and complexation with iron and protonation consts.)

IT 250207-80-8P  
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and cyclic voltammetry and optimized geometry)

IT 250207-73-9P  
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and cyclic voltammetry and optimized geometry and reduction and Mossbauer spectrum)

IT 250207-78-4P  
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and cyclic voltammetry and oxidation with change in chelation mode of ligand)

IT 250207-74-0P  
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and cyclic voltammetry and stability consts.)

IT 250207-76-2P  
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and oxidation and cyclic voltammetry and Mossbauer spectrum)

IT 98-88-4, Benzoyl chloride 182870-00-4  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reactant for preparation of salicylamide bipyridine tripodal ligands)

IT 7440-50-8D, Copper, complexes with salicylamide bipyridine tripodal ligands, properties 182870-04-8D, copper complexes **250207-72-8D**, copper complexes  
RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)  
(stability consts.)

RE.CNT 50 THERE ARE 50 CITED REFERENCES AVAILABLE FOR THIS RECORD  
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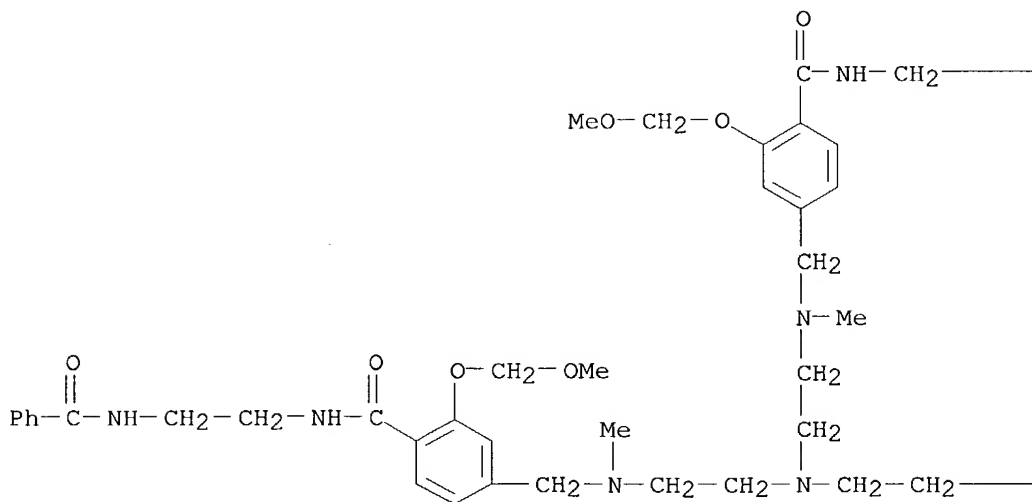
IT 250207-71-7P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (preparation and complexation with iron)

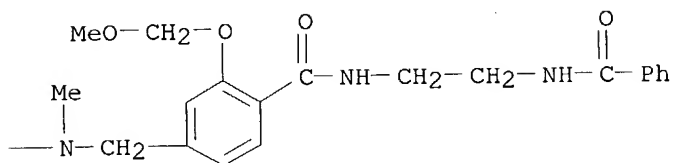
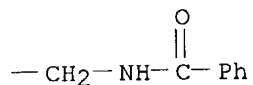
RN 250207-71-7 HCAPLUS

CN Benzamide, 4,4',4''-[nitrilotris[2,1-ethanediyl(methylimino)methylene]]tris[N-[2-(benzoylamino)ethyl]-2-(methoxymethoxy)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



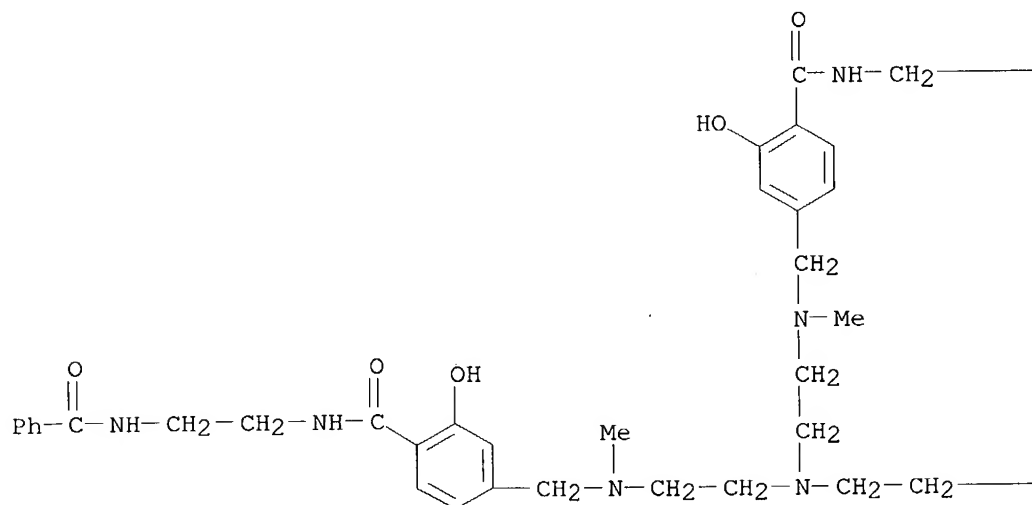
IT 250207-72-8P

RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and complexation with iron and protonation consts.)

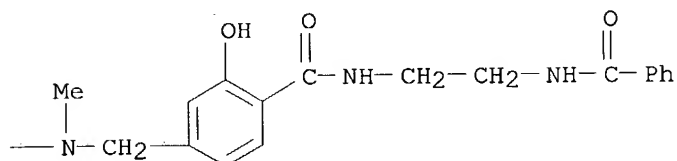
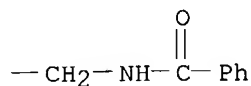
RN 250207-72-8 HCAPLUS

CN Benzamide, 4,4',4''-[nitrilotris[2,1-ethanediyl(methylimino)methylene]]tris[N-[2-(benzoylamino)ethyl]-2-hydroxy- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)  
(stability consts.

- L33 ANSWER 7 OF 13 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1999:624043 HCAPLUS  
 DN 131:358193  
 ED Entered STN: 01 Oct 1999  
 TI Structure and switching in bent-shaped molecular liquid crystal systems with two mesogenic groups linked by alkylene spacer  
 AU Choi, Suk-Won; Zennyoji, Masahito; Takanishi, Yoichi; Takezoe, Hideo; Niori, Teruki; Watanabe, Junji  
 CS Department of Organic and Polymeric Materials, Tokyo Institute of Technology, Tokyo, 152-8552, Japan  
 SO Molecular Crystals and Liquid Crystals Science and Technology, Section A: Molecular Crystals and Liquid Crystals (1999), 328, 185-192  
 CODEN: MCLCE9; ISSN: 1058-725X  
 PB Gordon & Breach Science Publishers  
 DT Journal  
 LA English  
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 Section cross-reference(s): 73, 75, 76  
 AB Structure and switching behavior were studied in liquid crystals consisting of bent-shaped mols. with the linkage of an alkylene spacer,  $m(O)AMnAM(O)m$ , where  $m$  and  $n$  are carbon nos. of end and spacer chains, resp. All the compds. exhibit a fan-shaped texture without a fringe structure in their smectic phase, different from the texture of conventional bent (banana)-shaped liquid crystals. In 12AM5AM12, two switching current peaks indicating the antiferroelec. phase were observed. The spontaneous polarization was about 600 nC/cm<sup>2</sup>. The color change due to the birefringence change is associated with the switching, though the extinction direction between crossed polarizers remains the same. This clearly proves that the bent-mols. do not tilt with respect to the layer normal. In the dielec. measurements, there exist two relaxations at 600 kHz and below 100 Hz and they are suppressed by a biased voltage. Structure and switching in the other systems, 8OAM5AM08, are also

described briefly.

- ST ferroelec antiferroelec switching bent shaped mol liq crystal system
- IT Liquid crystals  
(antiferroelec.; structure and ferroelec./antiferroelec. switching in bent-shaped mol. liquid crystal systems with two mesogenic groups linked by alkylene spacer in relation to)
- IT Liquid crystals  
(ferroelec.; structure and ferroelec./antiferroelec. switching in bent-shaped mol. liquid crystal systems with two mesogenic groups linked by alkylene spacer)
- IT Ferroelectric materials  
(liquid-crystal; structure and ferroelec./antiferroelec. switching in bent-shaped mol. liquid crystal systems with two mesogenic groups linked by alkylene spacer)
- IT Antiferroelectric materials  
(liquid-crystal; structure and ferroelec./antiferroelec. switching in bent-shaped mol. liquid crystal systems with two mesogenic groups linked by alkylene spacer in relation to)
- IT Antiferroelectricity  
Birefringence  
Refractive index  
Spontaneous dielectric polarization  
(structure and ferroelec./antiferroelec. switching in bent-shaped mol. liquid crystal systems with two mesogenic groups linked by alkylene spacer)
- IT Dielectric relaxation  
Ferroelectric switching  
Liquid crystal displays  
Periodic structures  
(structure and ferroelec./antiferroelec. switching in bent-shaped mol. liquid crystal systems with two mesogenic groups linked by alkylene spacer in relation to)
- IT Electrooptical effect  
(switching; structure and ferroelec./antiferroelec. switching in bent-shaped mol. liquid crystal systems with two mesogenic groups linked by alkylene spacer in relation to)
- IT **250689-35-1, 8OAM5AM08**  
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)  
(8OAM5AM08; structure and ferroelec./antiferroelec. switching in bent-shaped mol. liquid crystal systems with two mesogenic groups linked by alkylene spacer)
- IT **243975-13-5, 12AM5AM12**  
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)  
(structure and ferroelec./antiferroelec. switching in bent-shaped mol. liquid crystal systems with two mesogenic groups linked by alkylene spacer)

RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD

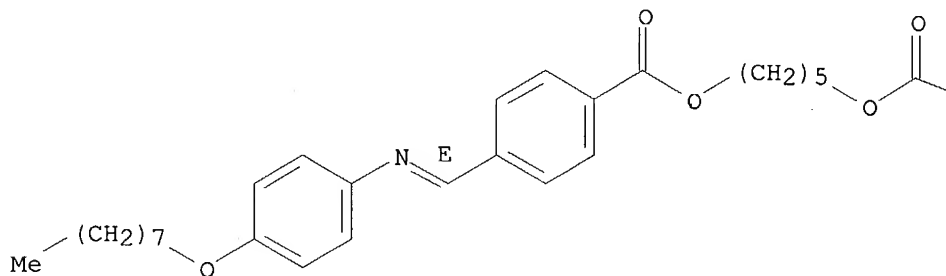
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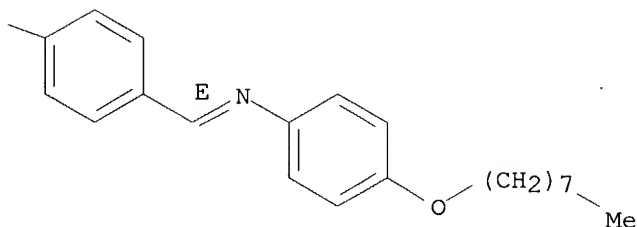
IT **250689-35-1**, 8OAM5AM08  
 RL: PEP (Physical, engineering or chemical process); PRP (Properties);  
 PROC (Process)  
 (8OAM5AM08; structure and ferroelec./antiferroelec. switching in  
 bent-shaped mol. liquid crystal systems with two mesogenic groups linked  
 by alkylene spacer)  
 RN 250689-35-1 HCAPLUS  
 CN Benzoic acid, 4-[(E)-[[4-(octyloxy)phenyl]imino]methyl]-, 1,5-pentanedyl  
 ester (9CI) (CA INDEX NAME)

Double bond geometry as shown.

PAGE 1-A



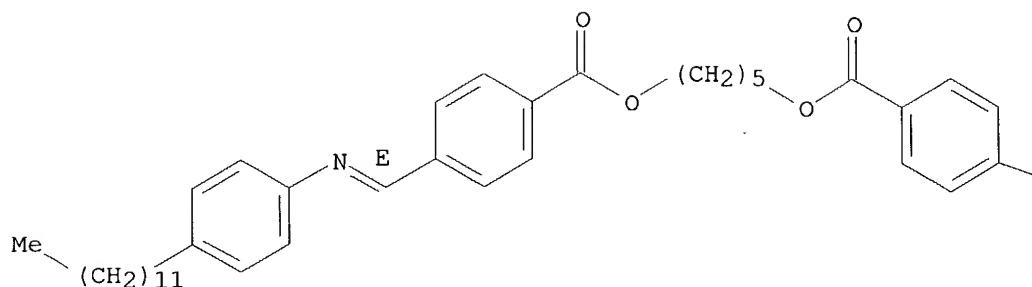
PAGE 1-B



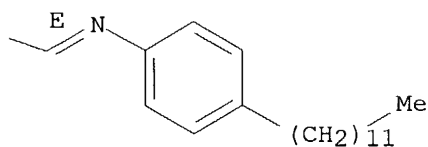
IT **243975-13-5**, 12AM5AM12  
 RL: PEP (Physical, engineering or chemical process); PRP (Properties);  
 PROC (Process)  
 (structure and ferroelec./antiferroelec. switching in bent-shaped mol.  
 liquid crystal systems with two mesogenic groups linked by alkylene  
 spacer)  
 RN 243975-13-5 HCAPLUS  
 CN Benzoic acid, 4-[(E)-[[4-(dodecyl)phenyl]imino]methyl]-, 1,5-pentanedyl  
 ester (9CI) (CA INDEX NAME)

Double bond geometry as shown.

PAGE 1-A



PAGE 1-B



L33 ANSWER 8 OF 13 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1999:597073 HCAPLUS  
 DN 131:235833  
 ED Entered STN: 22 Sep 1999  
 TI Ferroelectric liquid crystal compound for liquid crystal display device  
 IN Watanabe, Junji; Nakata, Yasukazu  
 PA Lintec Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 8 pp.  
 CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C09K019-06

ICS C09K019-22; G02F001-13

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other  
 Reprographic Processes)

Section cross-reference(s): 75

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11256163	A2	19990921	JP 1998-65572	19980316
PRAI	JP 1998-65572		19980316		

AB The ferroelec. liquid crystal compound has structure A-M1-X1-B-X2-M2-A ( A = terminal group; M1-2 = mesogen; X1-2 = connecting group; B = flexible group), wherein the flexible group is non-chiral divalent aliphatic group. The ferroelec. liquid crystal compound shows the excellent self-polarization without an optically active group.

ST ferroelec liq crystal display

IT Liquid crystal displays



(ferroelec. liquid crystal compound for liquid crystal display device)

IT Liquid crystals  
(ferroelec.; ferroelec. liquid crystal compound for liquid crystal display device)

IT Ferroelectric materials  
(liquid-crystal; ferroelec. liquid crystal compound for liquid crystal display device)

IT **243975-13-5P** 243975-14-6P 243975-15-7P 243975-16-8P  
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(Ferroelec. liquid crystal compound for liquid crystal display device)

IT 104-42-7, 4-Dodecylaniline 111-29-5, 1,5-Pentanediol 111-46-6, reactions 538-75-0, N,N'-Dicyclohexylcarbodiimide 623-27-8, Terephthalic aldehyde 16245-79-7, 4-Octylaniline 25265-71-8, Dipropylene glycol  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(Ferroelec. liquid crystal compound for liquid crystal display device)

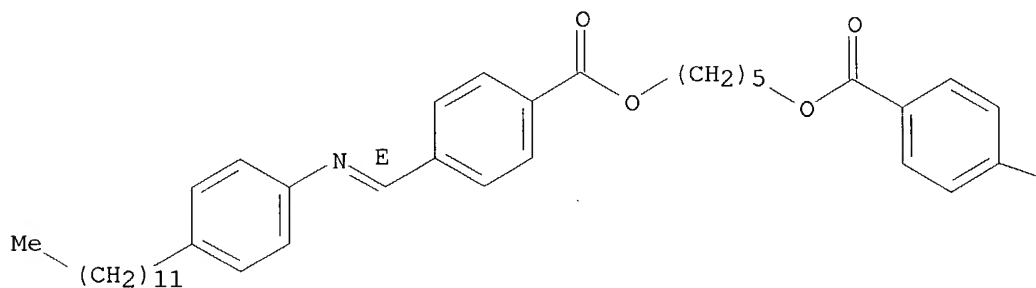
IT **243975-13-5P**  
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(Ferroelec. liquid crystal compound for liquid crystal display device)

RN 243975-13-5 HCAPLUS

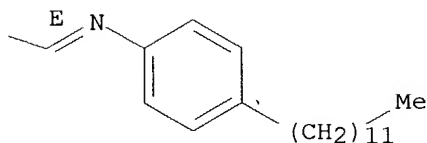
CN Benzoic acid, 4-[(E)-[(4-dodecylphenyl)imino]methyl]-, 1,5-pentanediy ester (9CI) (CA INDEX NAME)

Double bond geometry as shown.

PAGE 1-A



PAGE 1-B



AN 1999:309715 HCAPLUS  
 DN 131:102716  
 ED Entered STN: 21 May 1999  
 TI Analysis of the Structure of Dendrimers in Solution by Small-Angle Neutron  
 Scattering Including Contrast Variation  
 AU Poetschke, D.; Ballauff, M.; Lindner, P.; Fischer, M.; Voegtler, F.  
 CS Polymer-Institut, Universitaet Karlsruhe, Karlsruhe, 76128, Germany  
 SO Macromolecules (1999), 32(12), 4079-4087  
 CODEN: MAMOBX; ISSN: 0024-9297  
 PB American Chemical Society  
 DT Journal  
 LA English  
 CC 36-2 (Physical Properties of Synthetic High Polymers)  
 AB The anal. of a dendrimer of fifth generation by small-angle neutron  
 scattering (SANS) in solution is presented. The contrast of the solute  
 toward the solvent dimethylacetamide (DMA) is changed systematically by  
 measurements of the dendrimer in mixts. of deuterated with protonated DMA.  
 Addnl. SANS measurements at highest contrast and varying dendrimer concns.  
 allowed to determine the structure factor of the dendrimers in solution SANS  
 intensities measured at different contrast are shown to yield the contrast  
 .hivin. $\rho$  -  $\rho_m$  where .hivin. $\rho$  is the average scattering length d.  
 of the dissolved dendrimer and  $\rho_m$  is the scattering length d. of the  
 solvent. This allows to determine the mol. weight of the dendrimer in an  
 unambiguous fashion. The comparison of the measured and the calculated mol.  
 weight demonstrates that the dendritic structure under consideration here is  
 not fully perfect. The anal. of the radial structure of the dendrimer  
 rests on the decomposition of the measured intensities into terms depending on  
 powers of the contrast .hivin. $\rho$  -  $\rho_m$ . The leading term which  
 scales with the square of the contrast leads to the determination of the  
 scattering intensity referring to infinite contrast. This allows to  
 elucidate the radial scattering length d. in an unambiguous manner. The  
 anal. demonstrates that the present dendrimer, composed of flexible units,  
 has a compact structure where the d. has its maximum at the center of the  
 mol. This is in accord with recent theor. deductions.  
 ST dendrimer structure neutron scattering contrast variation  
 IT Neutron scattering  
 Radius of gyration  
 Structure factor  
 (anal. of structure of dendrimers in solution by small-angle neutron  
 scattering including contrast variation)  
 IT Polyamines  
 Polyamines  
 RL: PRP (Properties)  
 (dendrimers; anal. of structure of dendrimers in solution by small-angle  
 neutron scattering including contrast variation)  
 IT Dendritic polymers  
 Dendritic polymers  
 RL: PRP (Properties)  
 (polyamines; anal. of structure of dendrimers in solution by small-angle  
 neutron scattering including contrast variation)  
 IT 29530-52-7 29530-53-8 115584-73-1D, reaction products with  
 poly(propylene imine) dendrimers 179125-43-0D, reaction products with 3  
 and 4-(phenylazo)benzoic acid hydroxysuccinimide ester derivs.  
 179125-45-2D, reaction products with 3 and 4-(phenylazo)benzoic acid  
 hydroxysuccinimide ester derivs. 208049-78-9D, reaction products with  
 poly(propylene imine) dendrimers **208049-79-0 208049-80-3**  
**208049-81-4 208049-82-5**  
 RL: PRP (Properties)

(anal. of structure of dendrimers in solution by small-angle neutron scattering including contrast variation)

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IT 208049-79-0 208049-80-3 208049-81-4

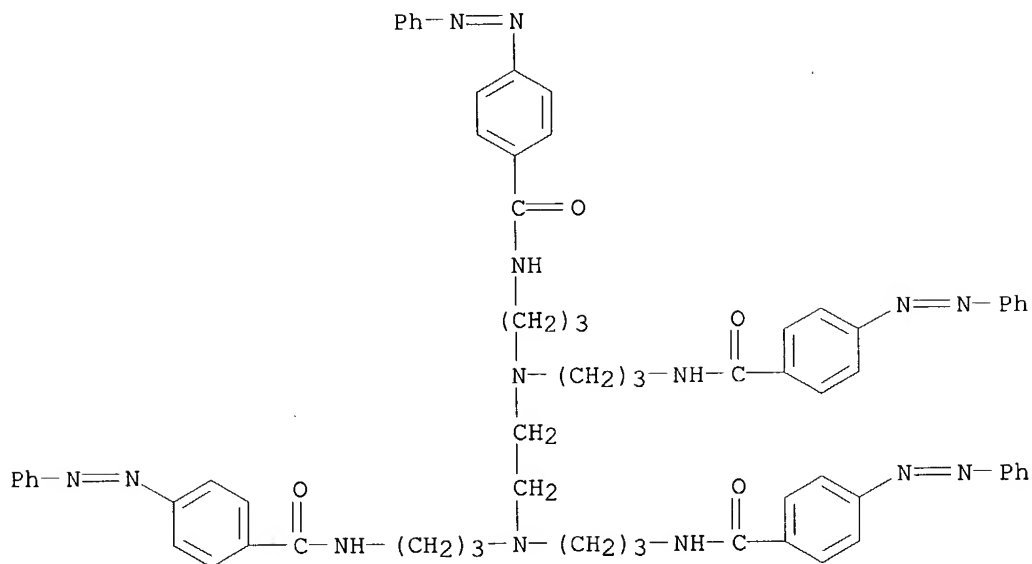
208049-82-5

RL: PRP (Properties)

(anal. of structure of dendrimers in solution by small-angle neutron scattering including contrast variation)

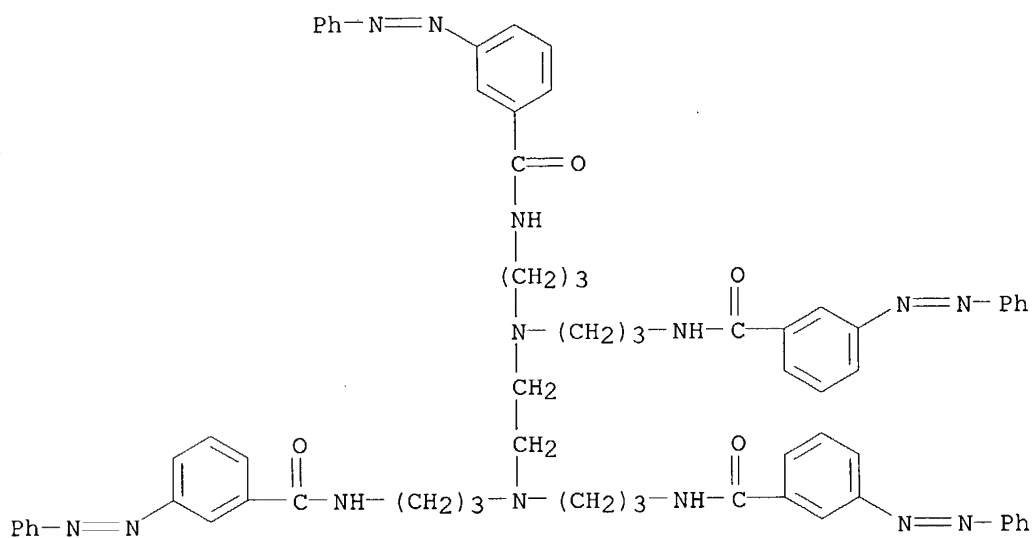
RN 208049-79-0 HCAPLUS

CN Benzamide, N,N',N'',N'''-[1,2-ethanediybis(nitrilodi-3,1-propanediy)]tetrakis[4-(phenylazo)- (9CI) (CA INDEX NAME)



RN 208049-80-3 HCAPLUS

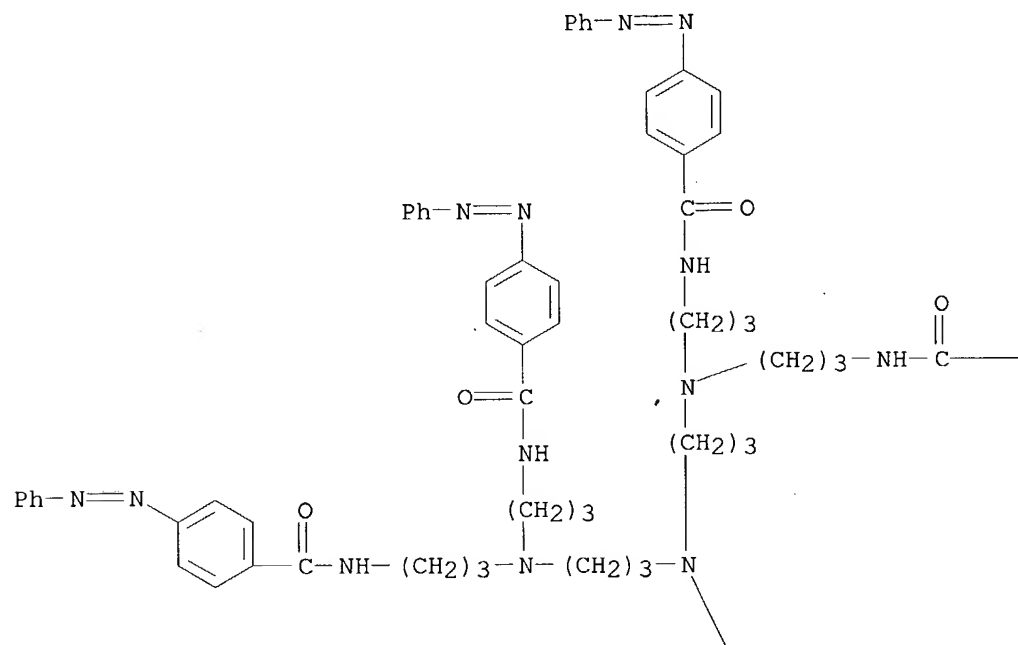
CN Benzamide, N,N',N'',N'''-[1,2-ethanediylbis(nitrilodi-3,1-propanediyl)]tetrakis[3-(phenylazo)- (9CI) (CA INDEX NAME)]



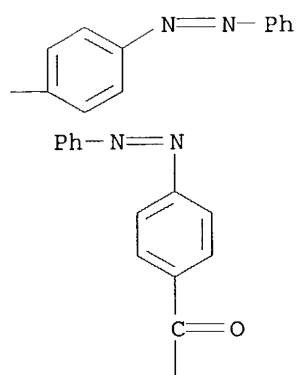
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CN Benzamide, N,N',N'',N'''-[1,2-ethanediylbis(nitrilodi-3,1-propanediyl)]tetrakis[4-(phenylazo)- (9CI) (CA INDEX NAME)]

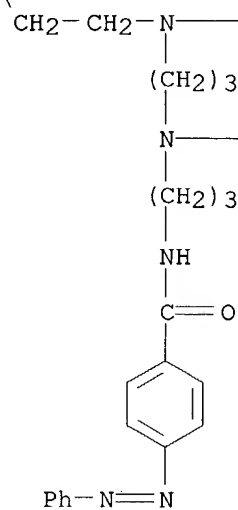
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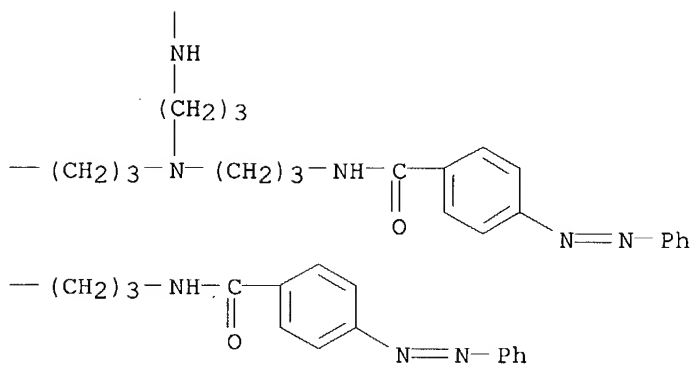
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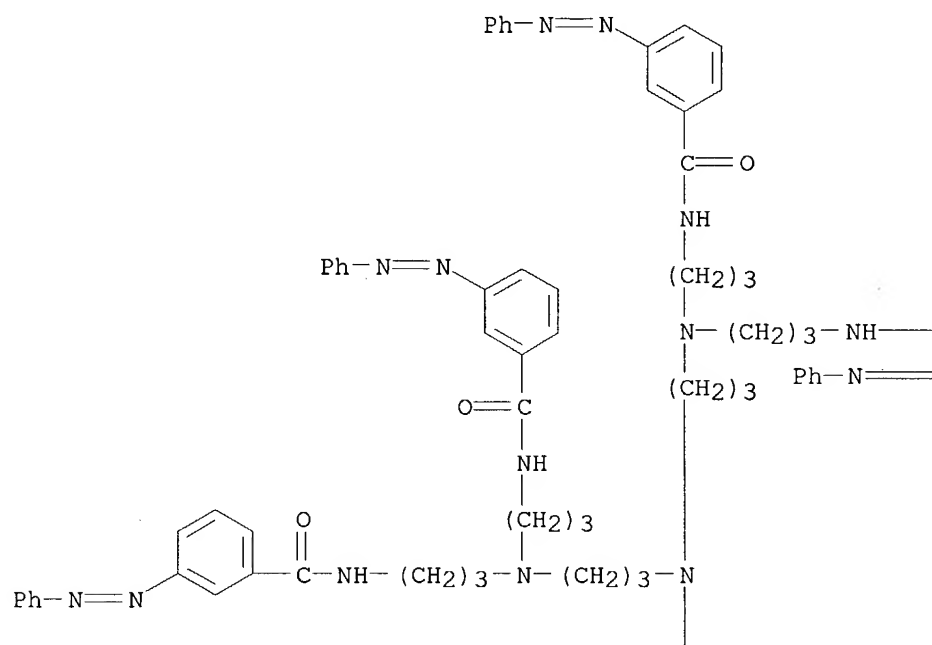
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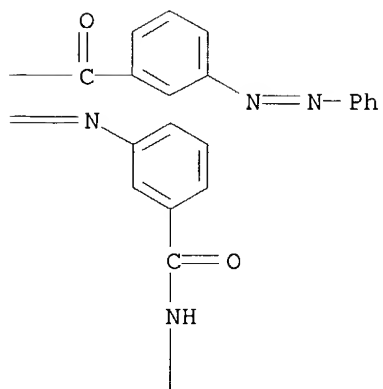
RN 208049-82-5 HCAPLUS

CN Benzamide, N,N',N'',N''',N'''',N''''',N'''''',N'''''''-[1,2-ethanediylbis[nitrilobis(3,1-propanediyl)nitrilodi-3,1-propanediyl]]octakis[3-(phenylazo)- (9CI) (CA INDEX NAME)

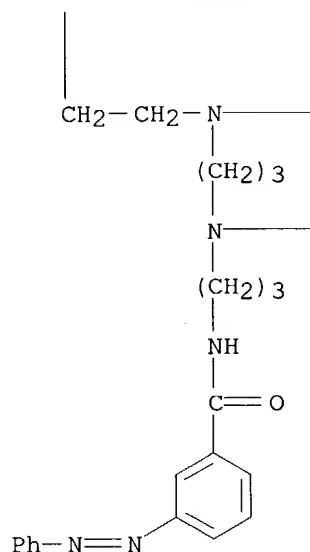
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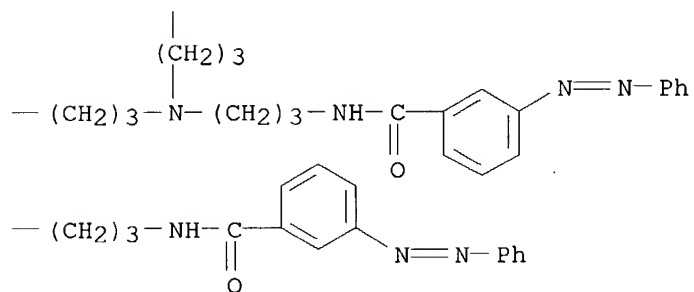
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PAGE 2-A



PAGE 2-B



L33 ANSWER 10 OF 13 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1998:759204 HCAPLUS  
 DN 130:82105  
 ED Entered STN: 04 Dec 1998  
 TI Toward Photoswitchable Dendritic Hosts. Interaction between  
 Azobenzene-Functionalized Dendrimers and Eosin  
 AU Archut, Andreas; Azzellini, Gianluca Camillo; Balzani, Vincenzo; Cola,  
 Luisa; Voegtler, Fritz  
 CS Kekule-Institut fuer Organische Chemie und Biochemie, Universitaet Bonn,  
 Bonn, D-53121, Germany  
 SO Journal of the American Chemical Society (1998), 120(47), 12187-12191  
 CODEN: JACSAT; ISSN: 0002-7863  
 PB American Chemical Society  
 DT Journal  
 LA English  
 CC 36-5 (Physical Properties of Synthetic High Polymers)  
 AB Two poly(propyleneimine) dendrimers bearing up to 32 photoisomerizable  
 azobenzene groups in the periphery have been used as potential hosts for  
 eosin Y (2',4',5',7'-tetrabromofluorescein dianion). The all-E azobenzene



dendrimers can be reversibly switched to their Z form by light excitation. Both the E and Z forms of the dendrimers quench the eosin fluorescence by a static mechanism. The quenching is most likely due to an electron-transfer reaction between the singlet excited state of eosin and the tertiary amine units present along the branches of the dendrimers. Quenching by the Z form of the dendrimers is more efficient than quenching by the E form. The E → Z and Z → E photoisomerization reactions of the azobenzene units of the dendrimers are sensitized by eosin via a triplet-triplet energy transfer mechanism. The results obtained indicate that eosin is hosted by the dendrimers and suggest that the Z forms are more efficient hosts than the E forms.

ST interaction azobenzene functionalized dendrimer eosin; photoisomerization azobenzene functionalized dendrimer eosin interaction

IT Electron transfer

Energy transfer

Excited state

Fluorescence

(interaction between photoswitchable azobenzene-functionalized dendrimers and eosin)

IT Dendritic polymers

RL: PRP (Properties)

(interaction between photoswitchable azobenzene-functionalized dendrimers and eosin)

IT Isomerization

(photoisomerization; interaction between photoswitchable azobenzene-functionalized dendrimers and eosin)

IT 107-13-1D, Acrylonitrile, hydrogenated, Michael addition dendrimers

17372-87-1, Eosin Y 29530-52-7D, Benzamide, m-(phenylazo)-, Michael

addition dendrimers 29530-53-8D, Benzamide, p-(phenylazo)-, Michael addition dendrimers **208049-79-0D**, Michael addition dendrimers

RL: PRP (Properties)

(interaction between photoswitchable azobenzene-functionalized dendrimers and eosin)

IT 107-13-1D, 2-Propenenitrile, hydrogenated, Michael-addition dendrimers, properties

RL: PRP (Properties)

(polypropylenimine; interaction between photoswitchable azobenzene-functionalized dendrimers and eosin)

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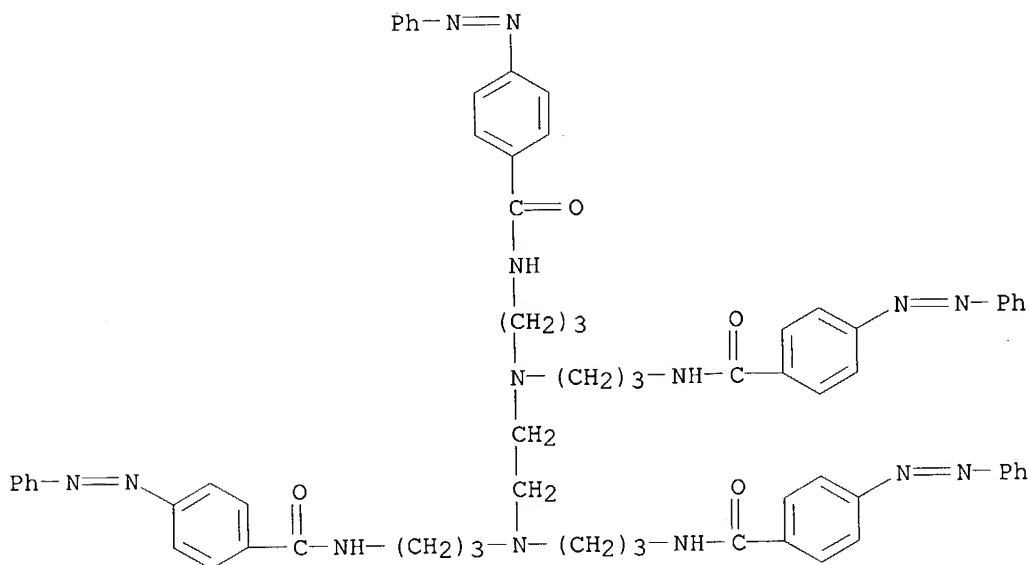
IT 208049-79-0D, Michael addition dendrimers

RL: PRP (Properties)

(interaction between photoswitchable azobenzene-functionalized dendrimers and eosin)

RN 208049-79-0 HCAPLUS

CN Benzamide, N,N',N'',N'''-[1,2-ethanediylbis(nitrilodi-3,1-propanediyl)]tetrakis[4-(phenylazo)- (9CI) (CA INDEX NAME)



L33 ANSWER 11 OF 13 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1998:308903 HCAPLUS

DN 129:34339

ED Entered STN: 28 May 1998

TI Azobenzene-functionalized cascade molecules: photoswitchable supramolecular systems

AU Archut, Andreas; Vogtle, Fritz; De Cola, Luisa; Azzellini, Gianluca Camillo; Balzani, Vincenzo; Ramanujam, P. S.; Berg, Rolf H.

CS Kekule-Inst. Organische Chem. & Biochemie, Univ. Bonn, Bonn, D-53121, Germany

SO Chemistry--A European Journal (1998), 4(4), 699-706

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

CODEN: CEUJED; ISSN: 0947-6539

PB Wiley-VCH Verlag GmbH

DT Journal

LA English

CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 38, 73

AB Cascade mols. bearing up to 32 azobenzene groups in the periphery have been prepared from poly(propylene imine) dendrimers and N-hydroxysuccinimide esters. The dendritic azobenzene species show similar isomerization properties as the corresponding azobenzene monomers. The all-E azobenzene dendrimer units can be reversibly switched to the Z form by light of the appropriate wavelength and can be converted back to the E form by either irradiation or by heating. That the photoisomerization quantum yield of each photoactive unit is not dependent on the number of such units present in the species shows there is so far no effective steric constraint towards photoisomerism on increasing dimension (generation) of the dendrimer. The first attempts to use dendrimers for holog. materials are described: It is shown that holog. gratings with diffraction efficiencies up to about 20% can be optically recorded in thin films of azobenzene dendrimers.

ST azo compd dendrimer holog data storage; photochem supramol chem optical recording

IT Holographic diffraction gratings

Holography

Optical recording materials

Optical switches

Supramolecular structure

(azobenzene-functionalized cascade mols. for photoswitchable supramol. systems)

IT Isomerization

(cis-trans, photochem.; azobenzene-functionalized cascade mols. for photoswitchable supramol. systems)

IT Polyamines

Polyamines

RL: PNU (Preparation, unclassified); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(dendrimers, from divergent approach; azobenzene-functionalized cascade mols. for photoswitchable supramol. systems)

IT Dendritic polymers

Dendritic polymers

RL: PNU (Preparation, unclassified); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyamines, from divergent approach; azobenzene-functionalized cascade mols. for photoswitchable supramol. systems)

IT 29530-52-7 29530-53-8

RL: PRP (Properties)

(azobenzene-functionalized cascade mols. for photoswitchable supramol. systems)

IT 115584-73-1DP, reaction products with poly(propylene imine) dendrimers

179125-43-0DP, reaction products with 3 and 4-(phenylazo)benzoic acid

hydroxysuccinimide ester derivs. 179125-45-2DP, reaction products with 3 and 4-(phenylazo)benzoic acid hydroxysuccinimide ester derivs.

208049-78-9DP, reaction products with poly(propylene imine) dendrimers

RL: PNU (Preparation, unclassified); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(dendritic and oligomeric; from divergent approach; azobenzene-functionalized cascade mols. for photoswitchable supramol. systems)

IT 208049-80-3P 208049-81-4P

RL: PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation)  
(from divergent approach; azobenzene-functionalized cascade mols. for  
photoswitchable supramol. systems)

IT 208049-79-0P 208049-82-5P

RL: PNU (Preparation, unclassified); PRP (Properties); TEM (Technical or  
engineered material use); PREP (Preparation); USES (Uses)  
(from divergent approach; azobenzene-functionalized cascade mols. for  
photoswitchable supramol. systems)

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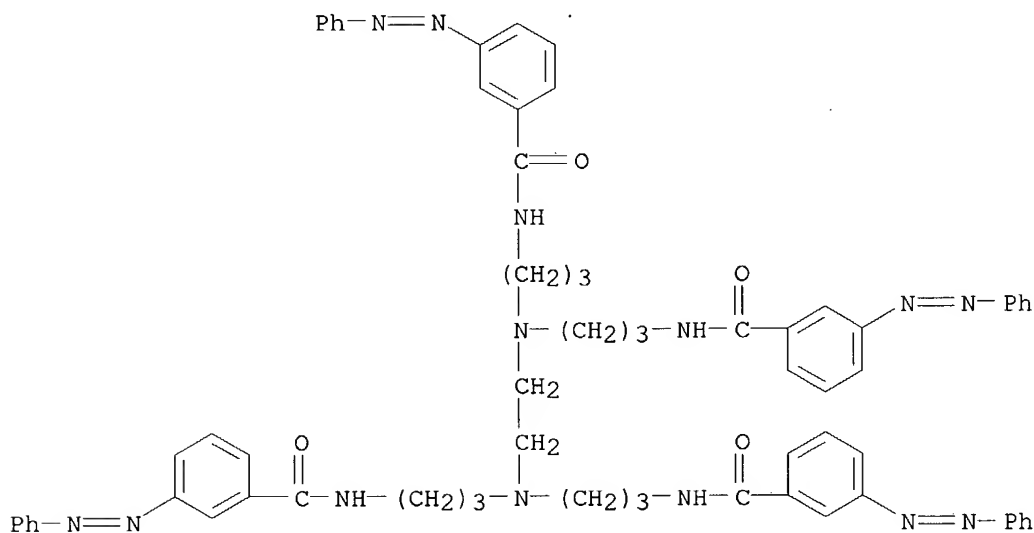
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IT 208049-80-3P 208049-81-4P

RL: PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation)  
 (from divergent approach; azobenzene-functionalized cascade mols. for  
 photoswitchable supramol. systems)

RN 208049-80-3 HCAPLUS

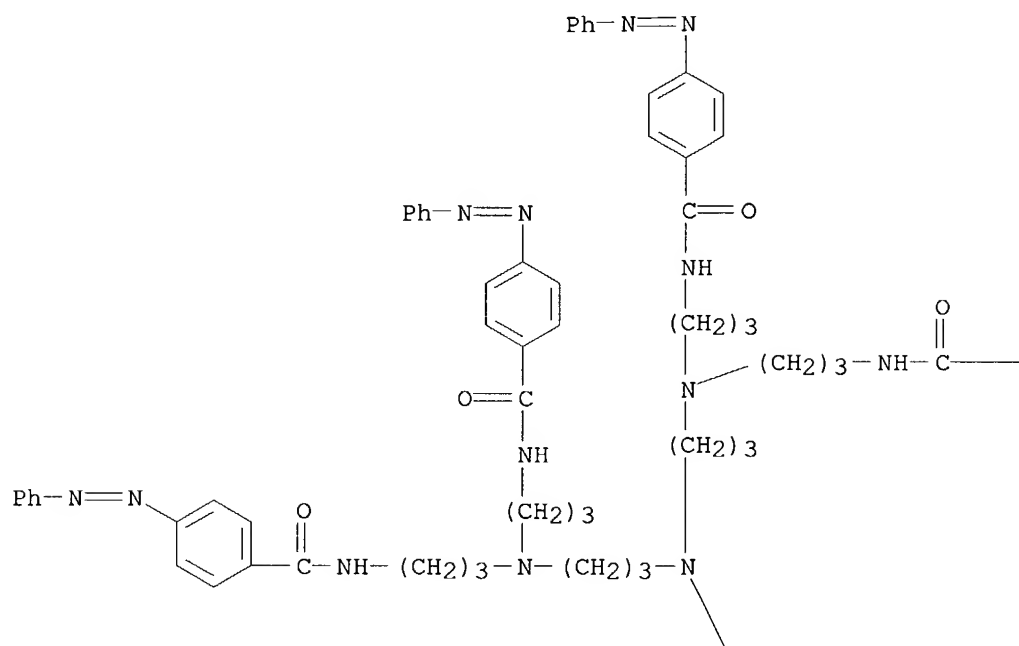
CN Benzamide, N,N',N'',N'''-[1,2-ethanediylbis(nitrilodi-3,1-  
 propanediyl)]tetrakis[3-(phenylazo)- (9CI) (CA INDEX NAME)



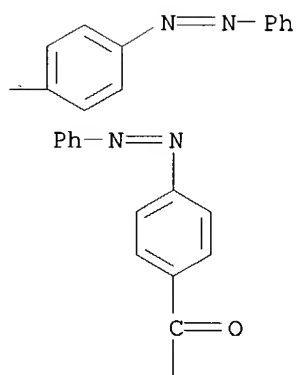
RN 208049-81-4 HCAPLUS

CN Benzamide, N,N',N'',N''',N''',N''',N''',N''''-[1,2-  
 ethanediylbis[nitrilobis(3,1-propanediyl)nitrilodi-3,1-  
 propanediyl]]octakis[4-(phenylazo)- (9CI) (CA INDEX NAME)

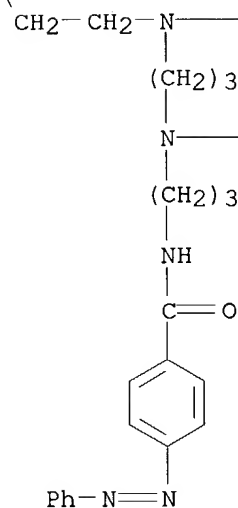
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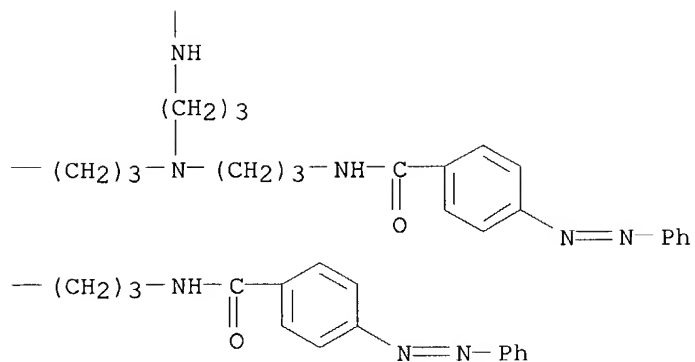
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PAGE 2-B



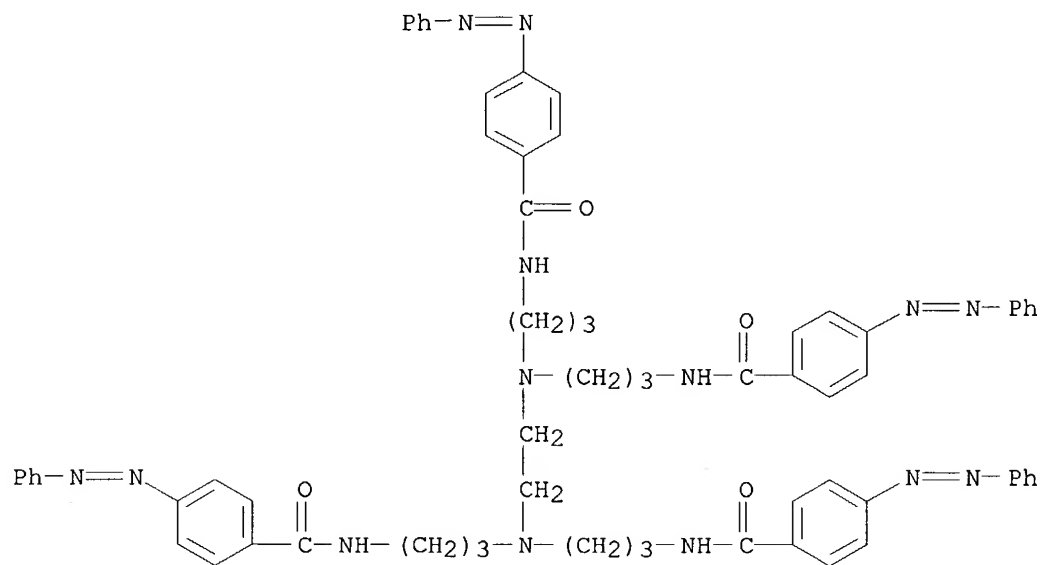
IT 208049-79-0P 208049-82-5P

RL: PNU (Preparation, unclassified); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(from divergent approach; azobenzene-functionalized cascade mols. for photoswitchable supramol. systems)

RN 208049-79-0 HCAPLUS

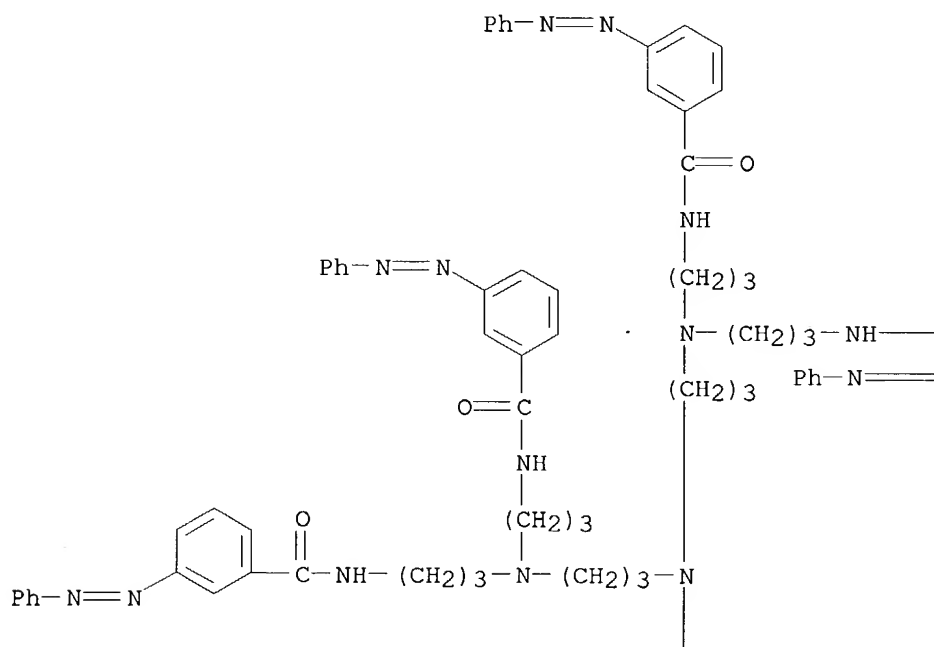
CN Benzamide, N,N',N'',N'''-[1,2-ethanediylbis(nitrilodi-3,1-propanediyl)]tetrakis[4-(phenylazo)- (9CI) (CA INDEX NAME)



RN 208049-82-5 HCAPLUS

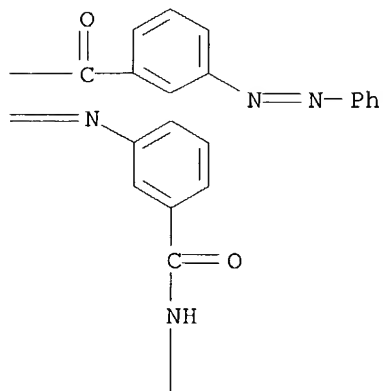
CN Benzamide, N,N',N'',N''',N'''',N''''',N'''''',N'''''''-[1,2-ethanediylbis[nitrilobis(3,1-propanediyl)nitrilodi-3,1-propanediyl]]octakis[3-(phenylazo)-(9CI) (CA INDEX NAME)

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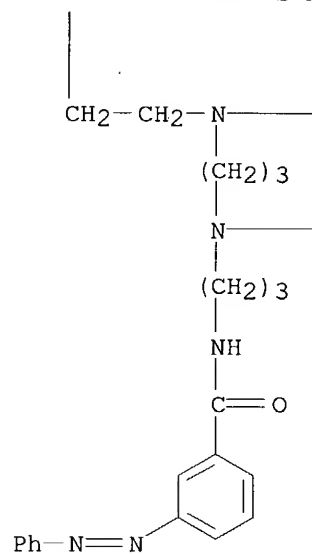




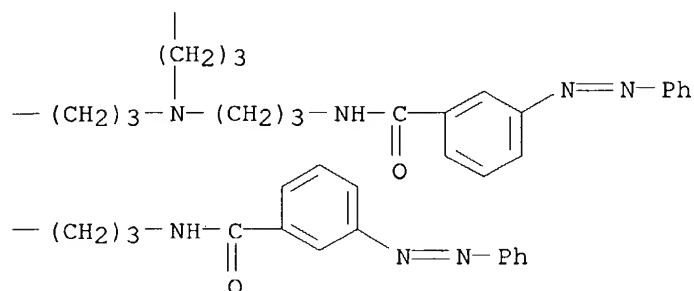
PAGE 1-B



PAGE 2-A



PAGE 2-B



L33 ANSWER 12 OF 13 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1997:550609 HCAPLUS

DN 127:262416

ED Entered STN: 29 Aug 1997

TI Molecular meccano. 10. Toward controllable molecular shuttles

AU Anelli, Pier-Lucio; Asakawa, Masumi; Ashton, Peter R.; Bissell, Richard A.; Clavier, Gilles; Gorski, Romuald; Kaifer, Angel E.; Langford, Steven J.; Mattersteig, Gunter; Menzer, Stephan; Philp, Douglas; Slawin, Alexandra M. Z.; Spencer, Neil; Stoddart, J. Fraser; Tolley, Malcolm S.; Williams, David J.

CS Sch. Chem., Univ. Birmingham, Edgbaston, Birmingham, B15 2TT, UK

SO Chemistry--A European Journal (1997), 3(7), 1113-1135

CODEN: CEUJED; ISSN: 0947-6539

PB Wiley-VCH

DT Journal

LA English

CC 22-13 (Physical Organic Chemistry)

Section cross-reference(s): 75

AB A number of nanometer-scale mol. assemblies, based on rotaxane-type structures, have been synthesized by means of a template-directed strategy from simple building blocks that, on account of the mol. recognition arising from the noncovalent interactions between them, are able to self-assemble into potential mol. abacuses. In all the cases investigated, the  $\pi$ -electron-deficient tetracationic cyclophane cyclobis(para-quat-p-phenylene) is constrained mech. around a dumbbell-shaped component consisting of a linear polyether chain intercepted by at least two, if not three,  $\pi$ -electron-rich units and terminated at each end by blocking groups or stoppers. The development of an approach toward constructing these mol. abacuses, in which the tetracationic cyclophane is able to shuttle back and forth with respect to the dumbbell-shaped component, begins with the self-assembly of a [2]rotaxane consisting of two hydroquinone rings sym. positioned within a polyether chain terminated by triisopropylsilyl ether blocking groups. In this first so called mol. shuttle, the tetracationic cyclophane oscillates in a degenerate fashion between the two  $\pi$ -electron-rich hydroquinone rings. Replacement of one of the hydroquinone rings-or the insertion of another  $\pi$ -electron-rich ring system between the two hydroquinone rings-introduces the possibility of translational isomerism, a phenomenon that arises because of the different relative positions and populations of the tetracationic cyclophane with respect to the  $\pi$ -donor sites on the dumbbell-shaped component. In two subsequent [2]rotaxanes, one of the hydroquinone rings in the dumbbell-shaped component is replaced, first by a p-xylyl and then by an indole unit. Finally, a tetrathiafulvalene (TTF)

unit is positioned between two hydroquinone rings in the dumbbell-shaped component. Spectroscopic and electrochem. investigations carried out on these first-generation mol. shuttles show that they could be developed as mol. switches.

- ST kinetics translational isomerism mol shuttle rotaxanes; mol shuttle rotaxanes electrochem UV NMR
- IT Crystal structure  
Molecular structure  
(crystallog. of complex between cyclobis(paraquat-p-phenylene) and 2-methylindole)
- IT Nomenclature, general  
(mol. shuttles)
- IT Activation energy  
Binding energy  
Cyclic voltammetry  
Electrostatic potential  
Hydrogen bond  
NMR (nuclear magnetic resonance)  
Oxidation, electrochemical  
Physical process kinetics  
Reduction, electrochemical  
UV and visible spectra  
(prepn.and translational isomerism of controllable mol. shuttles)
- IT Rotaxanes  
RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)  
(prepn.and translational isomerism of controllable mol. shuttles)
- IT Isomers  
(translation; prepn.and translational isomerism of controllable mol. shuttles)
- IT 145839-50-5P  
RL: BYP (Byproduct); PREP (Preparation)  
(byproduct; preparation of controllable mol. shuttles)
- IT 147553-58-0P  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(crystallog. of complex between cyclobis(paraquat-p-phenylene) and 2-methylindole)
- IT 5978-08-5P 134261-30-6P 134286-52-5P **145839-35-6P**  
145839-36-7P 145839-37-8P 145839-38-9P 145839-39-0P 145839-40-3P  
145839-41-4P 145839-42-5P 145839-43-6P 145839-44-7P 145839-45-8P  
145839-46-9P 145839-47-0P 145839-48-1P 145839-49-2P 145995-58-0P  
146063-36-7P 146063-42-5P 146063-43-6P 146063-44-7P 146063-45-8P  
146063-46-9P 146063-47-0P 146063-48-1P 195878-86-5P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(intermediate; preparation of controllable mol. shuttles)
- IT 134286-51-4P 145995-61-5P 195878-85-4P **195878-87-6P**  
RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)  
(prepn.and translational isomerism of controllable mol. shuttles)
- IT 623-24-5, 1,4-Bis(bromomethyl)benzene 5292-43-3, tert-Butyl bromoacetate  
51145-58-5, 4-Benzyloxyphenylhydrazine 108861-20-7  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reagent; preparation of controllable mol. shuttles)
- IT 4141-19-9 4141-20-2 5197-62-6 14556-10-6 134881-72-4  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(starting material; preparation of controllable mol. shuttles)
- RE.CNT 127 THERE ARE 127 CITED REFERENCES AVAILABLE FOR THIS RECORD

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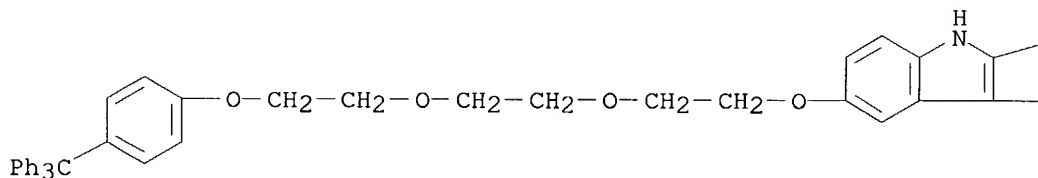
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RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
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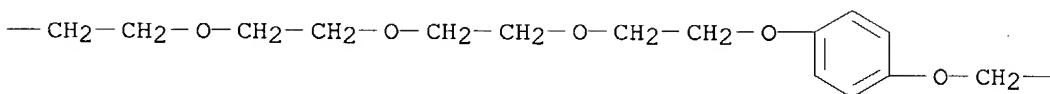
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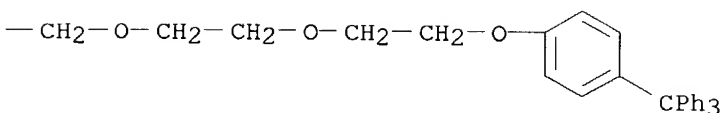


PAGE 1-B

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PAGE 1-C



IT 195878-87-6P

RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)  
(prepn. and translational isomerism of controllable mol. shuttles)

RN 195878-87-6 HCAPLUS

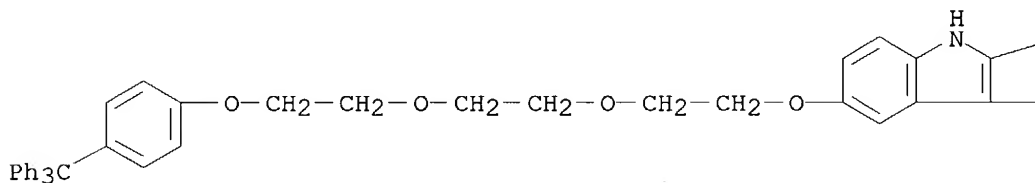
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traconta-2,4,7,9,12,14,16,18,21,23,26,28,29,31,33,35,37,39-octadecaene,  
tetrakis[hexafluorophosphate(1-)], rotaxane compd. with  
2-methyl-5-[2-[2-[2-[4-(triphenylmethyl)phenoxy]ethoxy]ethoxy]ethoxy]-3-[2-  
[2-[2-[2-[4-[2-[2-[2-[4-(triphenylmethyl)phenoxy]ethoxy]ethoxy]ethoxy]phen  
oxy]ethoxy]ethoxy]ethoxy]ethyl]-1H-indole (1:1) (9CI) (CA INDEX NAME)

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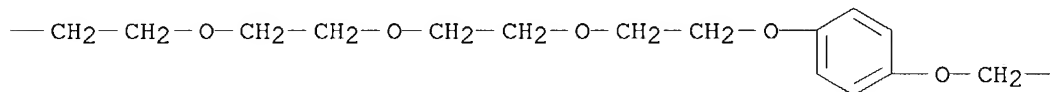
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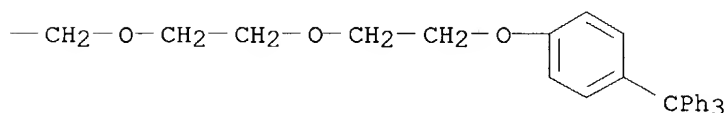


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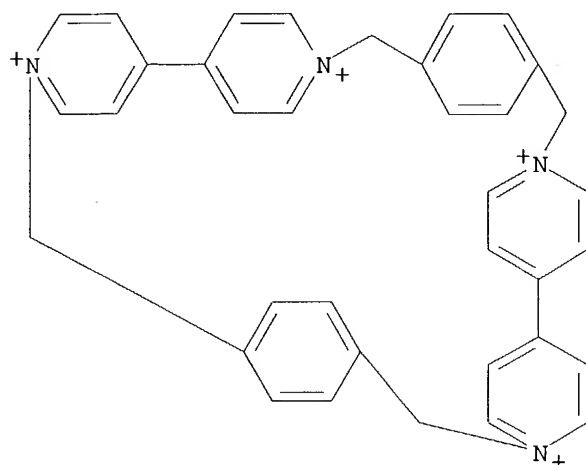
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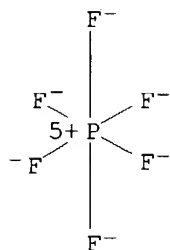


CM 4

CRN 16919-18-9

CMF F6 P

CCI CCS



L33 ANSWER 13 OF 13 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1993:234028 HCAPLUS  
 DN 118:234028  
 ED Entered STN: 12 Jun 1993  
 TI Towards controllable molecular shuttles. 2  
 AU Ashton, Peter R.; Bissell, Richard A.; Gorski, Romuald; Philp, Douglas;  
 Spencer, Neil; Stoddart, J. Fraser; Tolley, Malcolm S.  
 CS Sch. Chem., Univ. Birmingham, Edgbaston/Birmingham, B15 2TT, UK  
 SO Synlett (1992), (11), 919-22  
 CODEN: SYNLES; ISSN: 0936-5214  
 DT Journal  
 LA English  
 CC 28-23 (Heterocyclic Compounds (More Than One Hetero Atom))  
 GI

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505



\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

- AB The design and synthesis of a mol. shuttle I, in which the two components are a cyclobis(paraquat-p-phenylene)tetracationic macrocycle and a linear polyether chain intercepted by a 2,3,5-trisubstituted indole unit and a hydroquinol residue, and terminated by two 4-tritylphenyl ether functions, are described. The starting materials for this synthesis were 4-PhCH<sub>2</sub>OC<sub>6</sub>H<sub>4</sub>XH (X = NH, O), 4-Ph<sub>3</sub>CC<sub>6</sub>H<sub>4</sub>OH, and ClCH<sub>2</sub>CH<sub>2</sub>OCH<sub>2</sub>CH<sub>2</sub>OCH<sub>2</sub>CH<sub>2</sub>OH. A key step in the preparation of I is the Fischer indole synthesis of the linear component of the mol. shuttle from 4-Ph<sub>3</sub>C<sub>6</sub>H<sub>4</sub>OCH<sub>2</sub>CH<sub>2</sub>OCH<sub>2</sub>CH<sub>2</sub>OCH<sub>2</sub>CH<sub>2</sub>OC<sub>6</sub>H<sub>4</sub>NHNHCO<sub>2</sub>Me<sub>3</sub>-4 and ketal II.
- ST mol shuttle controllable; cyclobisparaquatphenylenetetracationic macrocycle linear polyether indole; benzyloxyaniline benzyloxyphenol tritylphenol conversion mol shuttle
- IT 5197-62-6, 2-[2-(2-Chloroethoxy)ethoxy]ethanol  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(alkylation by, of trityl- and benzyloxyphenol)
- IT 5978-08-5  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(alkylation by, of tritylphenoxyethoxyethoxyethoxyphenoxyethoxyethoxyethanol)
- IT 103-16-2, 4-Benzyloxyphenol 978-86-9, 4-Tritylphenol  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(alkylation of, with chloroethoxyethoxyethanol)
- IT 108861-20-7  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(cyclocondensation of, with bis(bromomethyl)benzene in synthesis of mol. shuttle)
- IT 623-24-5, 1,4-Bis(bromomethyl)benzene  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(cyclocondensation of, with phenylenebis(methylbipyridinium salt) in synthesis of mol. shuttle)
- IT 6373-46-2  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(diazotization and reduction of)
- IT 147553-58-0P 147553-59-1P  
RL: PRP (Properties); PREP (Preparation)  
(formation and spectra of, mol. shuttle synthesis in relation to)
- IT 145839-40-3P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and alkylation by, of hydroxyethoxyethoxyethoxyphenol)
- IT 145839-41-4P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and alkylation of, with chloropentanone ketal)
- IT 127943-23-1P 145839-39-0P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and alkylation of, with tritylphenoxyethoxyethoxyethyl tosylate)
- IT 51145-58-5P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation and butoxycarbonylation of)

IT 145839-38-9P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (preparation and debenzoylation of)

IT 145839-36-7P 145839-37-8P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (preparation and reaction of, in Fischer indole synthesis)

IT 147553-57-9P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of)

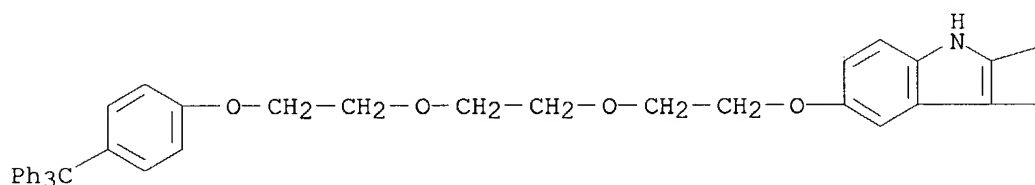
IT **145839-35-6P**  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of, as intermediate in synthesis of mol. shuttle)

IT **145839-35-6P**  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of, as intermediate in synthesis of mol. shuttle)

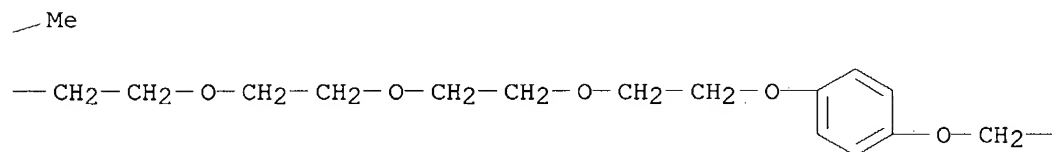
RN 145839-35-6 HCAPLUS

CN 1H-Indole, 2-methyl-5-[2-[2-[2-[4-(triphenylmethyl)phenoxy]ethoxy]ethoxy]e  
 thoxy]-3-[2-[2-[2-[2-[4-[2-[2-[2-[4-(triphenylmethyl)phenoxy]ethoxy]ethoxy]  
 ]ethoxy]phenoxy]ethoxy]ethoxy]ethyl]- (9CI) (CA INDEX NAME)

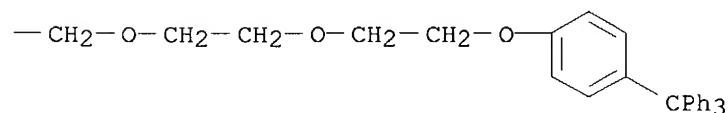
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